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ABSTRACT

This study explored the implications of communication and information flow in relation to various organizational concepts (particularly social service referral and delivery) of 91 social service agencies. Representatives at each hierarchical level within all of the agencies were interviewed and completed a questionnaire. In addition, the perceived similarity with regard to the agency's services as compared to all other agencies was ascertained. Four communication networks were generated from the questionnaire responses of members of 65 social service agencies that allowed for the construction of communication maps with regard to topic areas such as client referrals, direct treatment/service delivery, planning/innovation and interpersonal relations. These four networks then allowed for the reconstruction of the actual communication patterns among 65 social service agencies. From the findings, the consolidation and application of current technology is recommended as well as consistent checks on communication flow by network-analytic techniques for badly needed coordination, client referral, and other interorganizational efforts. (Author/TS)

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COMMUNICATION AND INTERORGANIZATIONAL RELATIONSHIPS AMONG COMPLEX ORGANIZATIONS IN SOCIAL SERVICE SETTINGS

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COMMUNICATION AND INTERORGANIZATIONAL RELATIONSHIPS AMONG COMPLEX ORGANIZATIONS IN SOCIAL SERVICE SETTINGS

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Abstract

If communication researchers are to gain significant insight into certain aspects of organizational behavior, there is a need to consider interorganizational communication. In spite of the popularity of organizational development, group dynamics, organizational change, etc. as approaches to study 'organization', few studies have dealt with the organization per se, most of them have focused on the individuals within the organization.

This study explored the implications of communication and information flow in relation to various organizational concepts (particularly, social service referral and delivery) of more than 90 social service agencies in the Lansing, Michigan, area. Representatives at each hierarchical level within all of the 91 agencies were interviewed and completed a questionnaire. This questionnaire consisted of the agency's and the interviewee's demographics, various measures of integration and work satisfaction, organizational interdependence as well as a large set of attitudes and perceptions toward the organization and the organization-set. In addition, the perceived similarity with regard

to the agency's services as compared to all other agencies was ascertained. Lastly, four communication networks were generated from the questionnaire responses of members of 65 social service agencies that allowed for the construction of communication maps with regard to topic areas such as client referrals, direct treatment/service delivery, planning/innovation and interpersonal relations. These four networks then allowed for the reconstruction of the actual communication patterns among 65 social service agencies.

The network analytic data were analyzed through an extended FORTRAN program for the CDC 6500 computer. The algorithm used far surpasses any other similar analytic technique (including matrix analysis) that the author is aware of in terms of utility, capacity and efficiency. Through network analysis any structure, or, in general, relationship can be (1) detected and (2) described at the dyadic, group or systems level of the network. The paper then describes the analysis of the identification and evaluation of the networks, the assessment of the interorganizational hierarchy and the evaluation of the individual agency's communication behavior. The interorganizational data--in addition to standard correlational analyses--were also analyzed via the BCTRY cluster analysis, Johnson's hierarchical cluster analysis and the MDSCAL-5 program providing multidimensional solutions. The network analytic findings (frequency, and importance of communication) are analyzed in their relationship to numerous other organizational and

interorganizational assessments of the set of agencies and are viewed in the light of past research findings. The author concludes by recommending the consolidation and application of current technology as well as consistent checks on communication flow by network-analytic techniques for badly needed coordination, client referral and other interorganizational efforts.

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Introduction

An increased desire and need to respond to critical human needs has led to a rapid proliferation of social service agencies, in both the governmental and private sectors. Urban areas, characterized by Wirth (1966) as densely populated and heterogeneous, have been especially subject to a burgeoning demand for more extensive human services in fields of health, education, employment, mental health, corrections, substance abuse and so on.

It is within this country's cities in particular that the accelerating complexity of modern life has spawned a concurrent upsurge of organizational bureaucracies. The social welfare field as much as any other has adopted this intra-organizational structure, characterized by an attempt to rationalize the world, that is to

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exercise control based on specialized knowledge. As Weber (1952) pointed out in his early formulation, the advantages that accrue to a bureaucracy include focus of expertise, standardization of values, maximization of coordination, accumulation of extensive knowledge and experience, and calculability of results.

This sophistication of intra-organizational structure unfortunately has not been evidenced in the inter-organizational realm, a social arena where partial conflict over values and resources is omnipresent and where no formal authority structure exists to mediate and coordinate interactions. This absence of inter-organizational coordination has had especially deleterious effects upon the effective and efficient delivery of human social services. In general, agencies in this field have been characterized by smaller than adequate budgets, limited manpower, vast numbers of multi-problem clients, and the inefficiency of disjointed client referrals. Numerous observers have documented the problems arising from an unmet need for comprehensive coordination of service delivery. Rice (1973) assumed a universal need for coordination of services, arguing that "the assumption that the individual practitioner is the basis unit of service delivery...has been outmoded by changes in both practice and agency administration." A descriptive study of child-serving agencies in one community, reported by Dinerman (1972), noted that a worker must create de novo a set of services for each client. Without an effective coordinating structure,

referrals prove time consuming and often ineffective. Although much discussion centers around the high cost of delivering needed services, Winer (1972) cited services for victims of family breakdown as those most deficient in coordination, with a correspondingly high cost associated with lack of service.

Examination of the limited amount of data available supports a similar discouraging conclusion: the present social welfare system is unable to deal effectively with many client problems. One report (Lansing Planning Department, 1973) showed that 60% of all clients seeking social services are turned away without service. The probability of receiving even one service is 0.4. Furthermore, the probability of a referral being effective of a client actually reaching the place he is referred and getting treated - is only 0.17. Implications for the multi-problem client are obvious, and 86% of all clients do require more than one service input. Given the above probabilities, the likelihood of a client receiving all needed services is relatively close to zero.

Other studies (Michigan Department of Management and Budget, 1974) indicate that the probability of effective referral ranges from a low of 0.07 to a high of 0.22. Another disquieting result of inadequate coordination is that single services provided independently of one another do not result in changes in clients' dependency status or life chances. Frequently, the failure to receive referred services prevents clients from benefitting from a service already provided.

Despite widespread recognition of the severe problems resulting from inadequate coordination among social service agencies such as duplications, gaps, or contradictions in services, a significant lacuna in social science research involves the examination of military, industrial, educational, governmental, or social welfare agencies as subjects in an analysis of corporate behavior. The problem of inter-agency cooperation and coordination has been approached from several different theoretical perspectives. A number of writers have cited the frequency and facility of communication between memberships of different organizations as a basis for coordination. Whether arising from propinquity (McCullough, 1959), from similarities in staff training and orientation (Barth, 1963), or from informal interactions among key decision makers (Morris, 1962), communication among members of different organizations may increase awareness of possible cross-matches between goals and resources and thereby expand the process of exchange.

An early effort to examine organizations as interacting elements in a social system was undertaken by Levine and White (1961) who proposed an "exchange model" of inter-organization relationships. They suggested that agencies which share domain consensus are able to unilaterally, reciprocally, or jointly allocate scarce resources of clients, labor, and other resources (funds, equipment, information) in order to most effectively meet community needs. In a later expansion (Levine, White, and Paul,

1969) a further distinction is drawn between corporate agencies, those which are local affiliates of national fund-raising bodies, e.g., the American Cancer Society, and federated agencies, those which raise and spend more of their funds on the local level. They posit that interaction between agencies is a function of domain consensus, goals, and access to resources. Many local organizations have traditionally been concerned with obtaining support from parent bodies or policy-making groups outside the community, from local governing boards, and from the general community in that order. Such an orientation may be acceptable for corporate agencies, but is disastrous for federated, direct service agencies who would benefit from fuller integration into the community system from which their support derives.

Formal models of exchange within a system of action were developed by Wigand (1976(a), 1976(b), 1975) and Coleman (1972) to simulate similar processes mathematically. Wigand suggests the extraction of four class variables from those that have been studied in the literature on interorganizational relationships. These four variables are: communication, interdependence, goal attainment and the environmental conditions. They describe the state of a system from which a dynamic model of interorganizational communication is developed. Some dynamic characteristics, multiple equilibria points as well as the direction fields of the model are described. Coleman's system is defined by actors, events, control

of actors over events, and interests of actors in the outcomes of events. A divisible event is described as an action affecting no other actors, while an indivisible event is one too large to be individually controlled, on which a collective decision is necessary. Clearly social service coordination is an example of the latter.

Conditions under which "coordinating agencies" emerge -- formal organizations whose major purpose is to order behavior between two or more independent organizations -- were hypothesized by Litwak & Hylton (1962). Their thesis of inter-organizational analysis argued that coordinating agencies will develop and continue in existence if formal organizations are partly interdependent (coordination is necessary to accomplish separate goals), agencies are aware of this interdependence (overt recognition given in public policy), and it can be defined in standardized units of action (behavior reliably ascertained and repetitive in character).

Inter-organizational coordination is characterized by the need to maintain both cooperation and conflict (i.e., autonomy). Over the long run, competition and conflict among agencies tends to promote an on-going re-analysis of community needs. Such a situation aids in maintaining a high degree of specialization of skill and interest in the problem area and guards against development of an inflexible monolithic network resistant to change. Some of the short- and long-term consequences of interagency conflict are presented by Barth (1963). Conflict is likely to arise when

there are autonomous agencies working in the same activity sphere, organized on a bureaucratic model, with differential philosophies and goals, in competition for financial and public support. Negative short-term consequences include alienation of public support, waste of staff energies, and absence of adequate division of labor. Positive consequences may also result such as intra-agency integration and cohesiveness, and increased staff motivation and sensitivity to the community.

An alternative framework for analysis of linkages among autonomous agencies has been advanced by Reid (1965, 1969). Building upon the theoretical approaches cited above, Reid suggested that three basic modes of behavior -- independence, interdependence, and conflict -- characterize interorganizational relations. Given the goal of better coordinated social service delivery, interdependence must be increased by a coordinating agency. Strategies of 1) facilitation of interdependence, via information exchange or goal reformulation/resource reallocation, or 2) inducement of interdependence, by withholding resources or manipulating power indirectly, are available to such an agency though as Reid demurred, "... coordination by such devices may still be quite circumscribed and subject to collapse once they are withdrawn."

A wide variety of applied models to achieve the desired level of inter-agency cooperation and coordination of services have been advanced by social science researchers and practitioners. For example, Long (1973) suggests that information and referral may

simply be a transitional service in the development of a centralized intake, assessment, and referral agency whose overt function would be to oversee inter-agency coordination.

Konopka (1959) was an early advocate of inter-agency "practitioner committees" as a means of delinquency prevention. These committees would assure continuity of client care and a better appreciation of the various kinds of staff needed to deal with juvenile delinquency, a total community problem in child rearing. The strongest argument for such practitioner committees is the flexibility they would bring to this facet of social service delivery, with a resultant increase in cooperation and coordination in existing resources.

A centralized consulting service for community agencies was described by Allison (1973) as a means of increasing communication among agencies around specific needs of clients that are not being met. Vanderbilt University law students were used as consultants to drug centers, family services agencies, a youth training facility, and a penitentiary all of which have clients with legal as well as social problems. After initial research on legal questions surrounding insurance matters, status of children, agency liability, etc., the Student Legal Aid Society instituted weekly meetings with all agencies for provision of legal services.

The outright merger of agencies is a more drastic means of insuring coordination and improvement of social services. This

approach was proposed by Fellin (1972) who noted a number of crucial elements in a successful merger: the role of goals and values to be achieved, the role of information about policies and procedures, and the role of relevant groups such as agency staff, United Fund boards, planning councils, clients and non-involved community agencies. Especially when dealing with a sensitive and potentially threatening issue like a merger, the support generated by participative decision making of all groups can greatly reduce chances of failure. Pfeffer (1972) examined business merger activity, though his conclusions seem equally applicable to non-industrial organizations. He presented evidence that organizations attempt to manage their dependence on the environment; one strategy to deal with organizational interdependence is merger, designed to 1) reduce symbiotic interdependence (vertical mergers) or 2) reduce competitive interdependence (horizontal mergers), or 3) diversify previous interdependencies (growth and expansion mergers). Social welfare agencies may engage in similar behaviors, although their results are not often documented on a profit and loss statement.

The joint venture is another vehicle for achieving inter-organizational coordination. Aiken and Hage (1968) studied the use of joint ventures among community agencies and postulated that the joint venture serves the objective of providing additional resources for program development while simultaneously maintaining the autonomy of the parent organization.

A widely implemented model for coordinating the activities of a variety of social service agencies is exemplified by the Community Chest or United Ways board. Faced with the problem of increasing competition for limited amounts of funds and consequent duplication and waste in fund-raising expenses, agencies consolidated their fund-raising under an "umbrella" agency responsible for collection and disbursement. The responsibility for disbursement quickly brought the Community Chest board to a prominent coordinating role as it was forced to establish priorities as well as to consider issues of service duplication, contradiction, and omission.

Finally, the advent of a widespread and relatively economical computer capability has resulted in the application of computer technology to many problems of management and coordination. Computers have found application in the medical field (Garfield, 1970) as well as in other areas. In general, rate of adoption of computer technology by social welfare units has lagged behind acceptance in other facets of the society. In most instances computers have been used to simplify and centralize the record-keeping functions that occupy much practitioner time and which are duplicated by many agencies. One of the more successful examples of computer utilization is the Chattanooga, Tennessee, Human Services System. Built around the city's IBM 360/30 computer and linked to three neighborhood Human Service Centers via cathode ray and hard copy terminals,

this system basically handles client demographic data common to all users. A Plan of Service listing future contacts with other agencies is stored for all multi-problem clients, and the primary worker is notified when a scheduled intervention does not take place. Intake procedure costs for the 90 participating service providers were drastically lowered when the number of intake forms was reduced from 90 to 4. Similar savings in time and effort were multiplied many times over on the client level.

As noted earlier, there is a marked paucity of field research investigating the paradigm of inter-organizational relationships and the phenomena associated with practical applications. Research spans only about the last five years and most has been heuristic in nature. Krueckeberg (1971) examined 109 metropolitan planning agencies and found four output types: budget oriented, service oriented, economic development and comprehensive planning orientation, and consistently low output. Kane (1972) reported an investigation of formal and informal factors in inter-organizational exchange and continuity of care between community mental health centers and family service agencies. He found no formal structures for exchanges among agency directors, and also that level of inter-organizational exchange is correlated with strength of executives' political values.

Research conducted from a systems theory perspective by Gummer (1973) measured the rate and purposes of inter-organizational

exchanges by a county board of assistance. In social welfare areas with firm division of labor, the focal organization adopted a competitive posture; more cooperative strategies prevailed in areas without clear consensus about allocation of function. The most intensive exchanges were with other public sector agencies, although there were extensive, superficial contacts with a wide variety of agencies.

Nelson and Burgess (1973), using an open adoptive systems model, followed the growing linkage pattern of a crisis call center. By focusing on patient referral, client consultation, and patient/client information exchange over a two-year period they documented the inclusion of more and also more different types of social service providers in the crisis call center's linkage network, and the growth in its role as an unofficial organizer of community resources.

Social service agencies, their staff, and clients can be conceptualized as elements in an interactive system, and general as well as cybernetic systems theory has come into increased acceptance as a means for analyzing inter-agency relationships (Wigand, 1976(a), 1976(b), 1975, 1974c; Hage, 1974; Hutcheson & Krause, 1969). Systems theory can deal with both inter- and intra-organizational events (Nelson and Johnson, 1974); Nelson and Lockert (1970) have used an applied derivative they term network analysis to focus on client pathway flow through a service network.

This technique can be used not only to chart client movement but also to provide measures of overall service delivery capabilities, and of individual case fiscal accounting as well as to ascertain treatment effectiveness (Burgess, Nelson and Wallhaus, 1974).

Rather than focus on patient flow, however, the present research project has adopted an alternative network analysis approach that places emphasis upon the characteristics, functions, and operations of the agencies themselves. By viewing social service agencies as independent but interrelated entities, it is possible to explore the implications of communication and information flow for the development of effective mechanisms to coordinate the delivery of social services.

Operationalizing "coordination" among agencies in a meaningful and feasible way within existing constraints posed serious difficulties. The major dependent variable employed was "communication" among agencies. Although the concepts are not synonymous, communication, obviously, is one form of coordination and, specifically, no coordination could take place without the pre-existence or concurrence of communication.

Traditionally, communication researchers have viewed organizations as a set of roles which are linked to one another by channels of communication, both face-to-face and mediated. From a larger perspective, organizations themselves can be approached as a set of members of a system with repetitive, recurring patterns of interactions resembling networks (Wigand, 1974b, 1974c).

These communication networks may be defined on the basis of frequency and perceived importance of contact, content area, and/or mode of transfer. Furthermore, members may be delineated according to their roles that they hold within the network: group member, liaison, bridge, dyad, isolate, and so on.

The present research effort was undertaken with several foci in mind. One goal was simple to compile an exhaustive description of the types and extent of interactions among a representative cross-sample of social service agencies in Lansing, Michigan. This data base would be useful to agency administrators and urban planners in many mid-sized, urban-industrial American cities of which the city under study is a demographic epitome. Systematic presentation of the inter-organizational communication patterns should enable the parties involved to identify referral resources which are over- or under-utilized as well as provide a baseline for comparison with other agencies.

Subsequent to collection of these empirical data, a second goal was to identify organizational and individual correlates of the observed communication patterns. Examination of simple correlations and interpretation of multivariate cluster analyses should suggest causal antecedents of the inter-agency communication linkages. Aside from the heuristic aspects of this research, the primary goal was to investigate the validity of several major theoretical perspectives on the problem of inter-organizational communication and coordination.

Methodology

Subjects. In a study of this nature there are two ways of viewing subjects. One may consider the agency as a unit of analysis or an agency employee. An attempt was made to select subjects at both levels. Each person, with the exception of two, was a paid employee of some social service agency. It was felt that different job positions could reflect different aspects of an agency; therefore, the author tried to assess a slice of the organization by reaching the agency's director or his designate, a middle level supervisory person, several general caseworkers, and one or two clerical personnel. Ultimately, 310 persons were interviewed, representing sixty-nine different agencies. Due to time constraints, it was impossible to go to as many agencies as desired. Therefore a sample, stratified on agency size and problem area, was selected. While this procedure did not produce a random sample, every attempt was made to make it as representative as possible.

Organizations selected fell into the following broadly defined categories:

Mental Health
Family and Child Services
Alcohol and Drug Abuse
Aid to the Handicapped
Employment
Legal and Police Assistance
Physical Health

A comprehensive list of over 200 helping organizations falling under these rubrics was compiled from The Answer Book (1973), a

compendium of social service agencies in the Lansing metropolitan area. An outside panel of experts, comprised of social science faculty members at Michigan State University, then rated the agencies on the basis of size; small, medium and large organizations were thus identified. In an effort to scale the sample size down to a more manageable, yet meaningful, number, team members of this study with field experience in social service agencies then selected the three to five most representative small, medium and large agencies in each problem-category. Criteria for "representativeness" included agencies' funding and jurisdiction (i.e., public, private and/or voluntary), types of programs and services offered (i.e., direct treatment, information and referral services, planning and/or evaluation programs were all included), and target populations served (i.e., children, adults, senior citizens, denominational or ethnic groups, etc.).

Instrument Development. From the outset it was felt that several types of data were necessary in attempting to understand inter-agency communication. It was necessary to characterize both the agency and the individual respondent. In addition, some characterization of the total social service environment in metropolitan Lansing, Michigan was desired. These data sets, however, merely served as support for the primary focus on communication.

A questionnaire was designed, pretested, and with this preliminary feedback, the items were again refined. In addition, it

was decided to submit all questions in the agency demographic section to the agency directors only, as there would be little or no variance in response to those items within an agency.

To obtain a picture of the social service environment, a card-sorting procedure was used. For this part of the study, sixty agencies were chosen as "contactees," in the language of network analysis. These agencies were not necessarily respondents in the study, although some were, but served as stimuli. The name of each of these agencies was punched and printed on a computer punch card. The respondents were then asked to sort them into as many categories as they wished, based on how similar they perceived these agencies to be.

In order to generate the communication network, it was necessary to collect data on with whom someone communicated, how often, on what topic, and how important this communication was. A sample questionnaire is in Appendix I. The same list of sixty contactees plus five additional agencies was used and three topic areas were chosen: direct treatment/service delivery, planning/innovation, and interpersonal relations. These topics, while perhaps not exhaustive, were thought to cover most communication for most agencies. Most importantly, they were thought to reflect three representative communicative functions (cf., similarly, Barnard, 1938) characteristic of most agencies. The author

believed referrals to be a critical variable in inter-agency communication/coordination. Therefore, respondents were also asked about the frequency of referrals to the agencies on the contactee list. This section of the questionnaire was not given to directors, as most would not have a caseload requiring referrals and was differently designed than the earlier mentioned network questionnaire. Due to its open-ended design for the generation of "contactees," a response number larger than 65 was possible for the referral "contactee" agencies.

Agency Contact and Questionnaire Administration. A letter of introduction and encouragement to participate was written and mailed out to the designated agencies. This letter was followed by another longer letter explaining more of the proposed study and alerting the selected agencies to an initial telephone contact. When a telephone contact was made, the researcher answered any further questions, explained possible benefits of the study, and scheduled an interview. Agencies were assured of the confidentiality of their responses and given the choice of completing the questionnaire privately or in the presence of the team members.

Results

To achieve a general over-all picture of the data, summary statistics were calculated for each of the more standardized items on the questionnaire and raw inter-item correlation matrices were computed. The matrices were then submitted to a standard factor

analysis program, which computed alpha-reliabilities and the author ran a BCTRY cluster analysis (Tryon, 1939) for the resulting factor groupings.

The resultant groupings for the agency demographics resemble those achieved by BCTRY, discussed below. The coefficient-alphas are all surprisingly high (.50 - .90) but it must be remembered that the groups were formed on the basis of factor loadings without regard to the actual content of the items. Similarly, certain groups of items contain forced-choice responses.

Cluster analysis (Tryon, 1939) is a statistical technique that can be used to objectively group together entities on the basis of their similarities and differences. Unlike traditional factor analysis which interprets derived factors as somehow underlying the observed variables, cluster analysis argues that one can discover the general properties of objects by an objective clustering procedure of grouping variables without imputing causative underlying dynamics to the properties. The multivariable V - (or variable) analysis is an example of the independent dimensional analysis in which succeeding clusters of items with high intercorrelations are "removed" from a complete correlation matrix in such a way as to minimize the number of composite factors that can reproduce the full array of intercorrelations without loss of generality.

In the present study the "entities" being analyzed were organizational variables descriptive of the sixty-five agencies which were respondents, and in a separate analysis, 36 variables which were selected to characterize the 310 individuals who filled out a questionnaire. In order to maintain a reasonable subjects-to-variable ratio, some organizational variables were dropped or collapsed or combined leaving a total of 31. The initial empirical-V analysis generated five clusters each constructed around a set of collinear "defining" variables. In order to reach a more optimal solution, however, the empirical clusters were reanalyzed with definers preset to give logical coherence to each cluster. The results of this present key cluster analysis are presented in Table 1.

The four clusters listed in Table 1 describe the four major structures of the 65 sampled agencies. Cluster 1 is essentially a socio-economic description of the agency. Thus one finds a privately funded, direct treatment agency with a well educated staff serving mainly Anglo, middle and upper class clients. The second cluster includes all three of the communication measures and the agency founding date, suggesting that newer agencies engage in more inter-organizational communication. Variables in Cluster 3 all relate to the size of the agency both in terms of staff members and budget. The final cluster is a relatively

minor grouping of funding variables which indicate a reliance on fees obtained for services as the primary means of support.

Briefly, in the context of this paper, it is noteworthy that the communication in the cluster analysis for Agency Level Variables items formed a tight cluster among themselves, that inter-agency communication and referral are not elements of other agency dimensions (cf., Table 1). There is a low correlation ($r = .23$ between Clusters 2 and 3 suggesting that communication increases as agency size increases. A similarly low but negative correlation ($r = -.23$) between Clusters 1 and 2 hints that more sophistication in an agency may not also imply greater inter-organizational exchange. Other correlations among these four clusters were insignificant.

TABLE I

Preset Key Clusters -- Agency Level Variables

Cluster		Variable	Factor Coefficient
1	(D)	More Wealthy Clients	.8654
	(D)	More Anglo Clients	.8161
	(D)	Fewer Black Clients	-.6603
	(D)	Sliding Fee Scale	.6138
	(D)	Direct Treatment Oriented	.4508
		No Co-Planning	-.4411
		Fewer Minority Clients	-.4139
	(D)	Better Educated Staff	.2838
		Privately Funded	.2832
Reliability = .8027			
2	(D)	More Total Communication	.9835
	(D)	More Frequent Communication	.9797
	(D)	More Referrals	.5003
		Newer Agency	.2589
Reliability = .8301			
3	(D)	More Professional Staff	1.0000
		More Clerical Staff	.9750
	(D)	Higher Budget	.8468
	(D)	More Clients	.4959
		More Paraprofessionals	.4081
Reliability = .9168			
4		Not Free Services	-.7081
		Less Government Funding	-.6689
	(D)	Charges Flat Fee	.6203
	(D)	Funding From Other Services	.5801
Reliability = .7505			

Inter-Cluster Correlations

Cluster	1	2	3	4
1	.8083	-.2255	.0306	.1301
2	-.2255	.8885	.2360	-.1085
3	.0306	.2360	.8479	-.2221
4	.1301	-.1085	-.2221	.5372

Diagonal = reliability using definers (D) only

A parallel cluster definition and refinement process was undertaken with the 36 variables that related to the personal characteristics of the 310 individual respondents (Individual Level Variables, cf., Table 2). Five clusters were generated at which point only a trivial amount of variance as measured by item communality remained in the residual correlation matrix. All five clusters are remarkably internally consistent along logical or rational dimensions. The first cluster describes agency workers with multi-problem clients, in need of help with employment, drug, or legal problems. Employees with these client problems are more likely to use fact-to-face communication in their work. Cluster 2 clearly describes employee seniority including such traits as longer employment, older age in years, and a more prestigious job. Cluster 3 makes reference to communication modalities, emphasizing impersonal written communication. The fourth cluster is composed of items usually referred to as job satisfaction measures: being heard and listened to on the job, participating in decisions, having a less routine job. Finally, once again the communication items are highly intercorrelated and form a cluster with no other variables included.

Not surprisingly, clusters 2 and 4 are correlated +.30. One would expect to find a positive relationship between job tenure and job satisfaction, if only because continuity at an agency usually results in a position with higher status. There is also

a small but positive correlation of +.24 between cluster 1 (multi-problem clients) and cluster 5 (communication). This finding provides some evidence for the proposition that workers with clients who need services from other agencies do engage in more communication with personnel at other agencies.

TABLE 2

Preset Key Clusters -- Individual Level Variables

Cluster		Variable	Factor Coefficient
1	(D)	Clients need employment help	.5583
	(D)	Clients need drug help	.5084
	(D)	More face-to-face communication	.4733
	(D)	Respondent male	.4012
	(D)	Clients need legal help	.3501
Reliability = .5887			
2	(D)	Worked longer in Lansing	.8158
	(D)	Worked longer at agency	.7846
	(D)	Older person	.6474
	(D)	Higher position	.5584
	(D)	Feels job prestigious	.3773
Reliability = .7970			
3	(D)	Less phone use	-1.0000
	(D)	More memo use	.4489
	(D)	More bulletin use	.2021
Reliability = .7341			
4	(D)	Believes new ideas heard	.8334
	(D)	Believes good ideas implemented	.7857
	(D)	Has share in decisions	.7554
	(D)	Complaints heard	.6920
	(D)	Believes job less routine	.3221
Reliability = .8258			
5	(D)	More total communication	.9728
	(D)	More frequent communication	.9667
	(D)	More referrals	.5706
Reliability = .8938			

Inter-Cluster Correlations

Cluster	1	2	3	4	5
1	.5887	.0760	.0500	.0002	.2406
2	.0760	.7970	.0757	.3013	-.0101
3	.0500	.0757	.7341	.0847	-.0916
4	.0002	.3013	.0847	.8258	-.0703
5	.2406	-.0101	-.0916	-.0703	.8938

Diagonal = Reliability

The BCTRY package also provides a technique whereby persons, or objects, can be grouped into clusters on the basis of their congruencies of similarities and differences. This procedure, called O- (or object) analysis is a means by which typologies can be constructed based on similar profiles of individuals' scores on a given set of dimensions. A number of advantages exist in forming typologies to classify diverse organisms:

1) Cumulative information about a "type" will enable any new individuals added to it to be better understood;

2) strengths and weaknesses of members of different types can be conceptualized in terms of the special characteristics of each type's profile;

3) among members of any given type, scores on single dimensions can be more accurately interpreted in light of the entire profile;

4) a type permits more accurate prediction of an individual's score on a criterion variable than if prediction were based on only a single attribute.

The intention in carrying out a cluster analysis of the 65 social service agencies was most closely related to items 2) and 4) above. In particular, the author was interested in investigating the relationship between O- analysis typologies and communication network group membership as revealed by the network analysis. Furthermore, mean communication scores for membership of each O-type could be compared in order to provide agency directors with practical information as to which typology profiles of organizational features are most highly correlated with extensive inter-agency contacts.

The dimensions or factors used to assign agencies to various O-types were the factor scores of each agency on the four clusters derived from the V-analysis of 31 organizational variables. The condensation method of O-analysis begins by computing simple sum z-scores for each subject on each cluster whose defines had been selected in the preset key cluster analysis. These four clusters were previously described as "agency sophistication", "communication", "agency size", and "fee-charging/funding". After z-scores were computed for each agency on each cluster, the 65 agencies were assigned to arbitrary sectors in the cluster score space. The OTYPE program then selects as "core types" those agencies in sectors with at least 2% of the total group. All other agencies are reassigned to those core types, a process that is iterated to a final solution of O-types plus a set of unique individuals. Results of the O-analysis are displayed in Table 3 (Appendix I) where it can be seen that the 65 social service agencies encompassed nine distinct typologies based on internally similar profiles of dimension scores. In addition, three agencies did not resemble any of the core type profiles closely enough to be included as O-type members. These subjects are listed separately as unique agencies. A graphic representation of the O-types is provided in Appendix II (figures 1a through 1i) where the mean scores in standardized units on each dimension for all O-type members clearly display the various profile patterns.

The primary units of analysis, for the purposes of this study, were not individual members of specific organizations, but organizations or agencies themselves. The data collection technique utilized a cross-section of individuals within specific agencies, i.e., director, supervisors, line workers and secretaries, and then cumulated these responses into averaged organizational scores. Given this basic unit of analysis, communication networks emerged when organizations reported repetitive, recurring communication interactions with other organizations in the system. The networks show the paths which information takes as it moves from one system member to the next. The specific network program (NEGOPY) used (Richards, 1971) permits the inclusion of nearly 5,000 members into the network system and is capable of computing over 50,000 unique links. In the study considered here, 65 agencies were included in the network system, with about 510 links computed for each of the three networks.

Within the network as a whole, specific subsets of organizations were identified as group members through the network analysis program. For the purposes of this study, to be a group member required that an agency's communication be with the same agencies that have 50.01% or more of their communication contact among each other. Specific group membership is determined by a successive iteration process that extracts formative clusters reporting similar communication linkages within a given network.

Five primary network role designations are available to classify system participants. Organizations which do not fulfill any of these definitions are simply called "others."

1) Group Members. This role implies that a node is a member of a clique or cluster of agencies who communicate more among one another, or with a common member, than among non-group members. Individual groups may be able to communicate among one another through bridges and liaisons.

2) Bridges. Bridges are members of specific groups and communicate with at least one other group.

3) Liaisons. Liaisons are per definitione not group members. However, liaisons serve the crucial function of providing links between two or more independent groups.

4) Isolates. Isolates are agencies which have no links to other agencies and thus do not participate in the network. Isolates Type One have no links and are fairly isolated within the network. Isolates Type Two are agencies which have merely one link.

5) Tree Nodes. Tree nodes are agencies that have a single link to a participant and have some number of other isolates attached to themselves.

The major goal of a network analysis is to specify the pathways through which communication moves in a given system. In any system, however, the network may be defined in numerous fashions; in this instance the networks were defined along two dimensions: 1) frequency and perceived importance of communication interactions; and 2) topic of interactions, or specific subject matter of exchange.

When networks included communication that was both very low in importance and very infrequent, large undifferentiated groups

appeared; nearly all agencies have some contact with one another.* Thus in order to be included, a link had to exceed a minimum threshold level of frequency and importance which facilitated the breakdown of large masses into meaningful subsets characterized by more frequent, relatively important communications.

The network program utilized generates information of two specific types: 1) information about group composition, and 2) information about individual "nodes" or agencies. One index of group structure is the connectedness score which measures the degree to which members of a group are connected to each other. A group with a connectedness score of .26 would be considered as having more direct links among members than a group with a connectedness score of .16.** In addition to this information about groups, three measures were conceived which summarize communication characteristics of individual group members. These three measures may be summarized as follows:

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*It should be noted that every communication linkage from a given agency to another was primarily assessed by the frequency of a communication. The frequency scores ranged from 4 = "once a day or more often" to 1 = "once or twice every three months." These frequency scores were then weighted by the respondent's perceived importance of this communication. Each communication link then was represented in one single, weighted score composed of both frequency and importance. A sample copy of the network analysis instrument, entitled "Personal Contact Checklist Instructions," is included in Appendix I and provides additional information about how the communication network was generated.

**A group that is completely connected, consequentially, has a connectedness score of 1.0. For a detailed description of connectedness and additional structural network measures see Wigand (1974b) and Farace and Wigand (1975).

1) Individual Internal Linkage. This measure is the ratio of in-group links to the total number of possible in-group links reported by an individual group member. An agency with an internal linkage score of 0.6 would indicate a higher propensity for in-group communication than an agency with an internal role score of 0.2.

2) Individual External Linkage. This measure is the ratio of out-group links to the total number of possible out-group links. An agency with an external linkage score of 0.8 would indicate a higher propensity for out-group communication than an agency with an external role score of 0.05.

3) Individual Balanced Linkage. This measure is the ratio of in-group links to the total number of links reported by an agency. An agency with a balanced score of 0.5 would indicate a more even communication flow between group and non-group members than an agency with a balanced score of 0.1 or 0.9.

In addition to the network composed of the aggregate of all types of communication, three separate analyses focused on direct service/treatment, planning/innovation, and interpersonal relations. Finally, a fifth network dealt not with transfer of messages, but with the actual passage of clients from one agency to another. This referral network permitted a comparison between groups and agencies which communicate with one another, and those which actually utilize the services of other agencies via the referral process. Specific information about each network is presented in Appendix I (cf., Tables 5 through 8).

The first set of results from the communication questionnaire to be analyzed is the combination of communication across all three topic areas, i.e., direct service/treatment, planning/innovations, and interpersonal relations. (The specific parameters that

were used in this network analysis program are listed in Table 4, along with the groups resulting from the analyses to be described.) The manipulations of the program produced seven groups, of which Group #1 is the largest. It has agencies of all types in it, but is dominated by family service agencies. In Appendix I, Table 5, the members of this group are listed along with the external linkage, internal linkage and balanced linkage scores for each agency. The connectedness score for the group is the average of the internal linkage scores for each agency.

A plus sign next to the internal linkage score of an agency indicates that its score is higher than the average score, and consequently that agency has a more active role in communication that occurs among group members. Similarly, a plus sign after an external role score indicates a more active than average role in communication between this group and the rest of the agencies. On this basis, any agency with a plus next to both of its scores is communicating considerably with a variety of agencies, and may be considered as a focal point in the flow of communication among agencies. Although the possible range of values for internal role and external role are the same, in practice the external role scores tend to be much lower, since the number of possible external links is much greater. Therefore, the scores for internal and external linkages are not directly comparable and balanced linkage

scores have been included to show whether an agency is primarily internally or externally directed in its flow of communication.

The connectedness score, given for each group, must be interpreted with caution when used for comparison between groups. It is intended to give an idea of how tightly knit the group is; however, it tends to vary inversely with the size of the group, since there are so many more potential links within the group as group size grows. For example, connectedness scores are generally much lower for agencies in Group #1 as compared with Group #2. Group #2 is considerably smaller and it is consequently much easier for members to contact a large proportion of the people in their group. With these analytical tools in hand, it will suffice to briefly describe the remaining six groups noting specific distinguishing characteristics. Group #2 is composed of mental and physical health agencies, with three predominant members. Group #3 consists of juvenile agencies and health agencies with one of each type as leading members, and a coordinating agency heads Group #4. Agencies in Group #7 are concerned primarily with prison and employment problems.

TABLE 4

Communication Network Analysis Program Input Parameters*

Parameter	Value
Number of nodes	91
Number of links	5,000
Assume reciprocation of communication	Yes
Number of iterations or attempts at group formation	8
Maximum path length	2
Maximum number of nodes permitted to be extracted from a group during splitting	12
Attempt to split group if standard deviation of in-group path lengths is greater than	0.2
Parameters for linkage formula:	
Low weight	27
High weight	207
Exponent	1

* Although there are many more user-specified parameters, most deal with input/output options and specifications.

Besides group members there are ten Type 1 isolates, ten Type 2 isolates and four "others". These members play a peripheral role in the communication structure, but the reason why and whether this is to be desired or not depends on the specific agency. Its problem area may be so specific or its environmental conditions, such as funding or population served, be such that communication is unnecessary or inefficient.

Liaison agencies are much more vital to the overall communication network. They act as a link between groups that might not otherwise be interconnected. Consequently, liaisons can act as conduits of information which without their presence would be confined to a single group. Agencies performing this function are also listed in Appendix I, tables 5 through 7, along with the groups they connect.

In addition to the overall aggregate communication network that was analyzed and described above, networks reflecting communication regarding each of these topic areas individually were analyzed. Within each of the topic areas, different group structures--subsets of the aggregate communication network--were found indicating that the communication content does influence an agency's communicative behavior. For instance, agencies in a direct service/treatment group would probably be involved on the individual casework level while those in a group based on planning/innovation would be concerned more with policy decisions and longer-range issues in human service delivery.

Using essentially the same parameters as in the overall communication network analysis, the direct service/treatment network is generated as one large group containing 88 of the 91 agencies listed as potential contacts. As a result of the inclusiveness of this group, all internal linkage scores for group members are 1.0, external linkage scores are 0.0, and balanced linkage scores are 1.0. Communication in the direct service area is so frequent that agencies cannot be broken down into subgroups without altering network program parameters beyond meaningful limits. Given the fact that agencies in the same group can be connected by a maximum of two step links, this means that concerning client treatment at least, information from any agency can be communicated to any other agency through a single intermediary. Expressed differently, this implies that in terms of accessibility, each agency can be reached with two steps. The three remaining agencies are isolates, not in contact with any of the 88 group members.

When agencies are examined in light of their communication concerning planning/innovation topics (cf., Appendix I, Table 6), or interpersonal relations topics (cf., Appendix I, Table 7), they do form distinct groups. This indicates that there is less communication about these topics than about direct treatment. The groups formed in the planning network and social network have many members in common, suggesting that discussions of future strategies may take place within a social context.

In interpreting the structure of the referral network, the reservations mentioned earlier about the assumptions of the network analysis program and its applicability to inter-organizational communication arise again in a slightly different context. Group membership in this instance means that members of a group make referrals to or receive referrals from the same agencies. Whether these other agencies are also in the group is irrelevant; consequently, these are two groups composed of agencies that do not refer to each other at all. This commonality of an agency to which it sends and from which it receives referrals may imply some similarity amongst themselves, but such a datum alone does not provide any basis for judging what that similarity is.

Otherwise, analysis of client referral patterns proceeds as described above for communication patterns. A total of six groups exist among the 91 agencies based on referral behavior; in addition, there are twenty-six isolated agencies making no referrals, nine liaison agencies connecting groups, and two others which occupy no identifiable role (cf., Appendix I, Table 8).

The results of the network analyses need to be amplified. In an attempt to discover reasons why communication lines exist as they do, the data from the card-sorting task was subjected to different clustering procedures. Two complimentary techniques were used: multi-dimensional scaling (MDS) and hierarchical clustering. The former, using a measure of fit called stress,

produces a perceptual space or map of the stimuli with inter-point distances being roughly interpretable as stimuli similarities. The latter allows one to judge whether the subjects are using a hierarchical structure or not.

Input to both programs is generally a lower triangular matrix where ent(a_{ij}) = some measure of similarity or dissimilarity between stimulus i and stimulus j. In this case, it was the number of times a pair of agencies was placed in the same category as being similar. Originally it was intended to use all sixty contactees, but due to core limitations of the Michigan State University computer, it was necessary to reduce the stimuli set to fifty. This was accomplished by eliminating the ten agencies most frequently categorized as "unknown".

Three major problems are involved with MDS: 1) how many dimensions are necessary to adequately represent the data, 2) whether the data violate the triangle inequality, and 3) the "local minima" problem. The non-metric program, MDSCAL-5 (Kruskal, 1964; Kruskal and Carmone, 1969), allows the user to select from a two to ten dimensional solution. Problems of interpretation arise above three, so this study remained in this lower bound. The program assumes Euclidean space wherein the sum of the lengths of any two sides of a triangle must be greater than or equal to the third side. As the stimuli points are being fitted into the requested number of dimensions, it becomes obvious that any data set violating the inequality will not be acceptable. Stress is a function of the number of iterations or "jiggles" applied to the initial inter-point distances. This function has a different

shape for each data set and the program halts on any iteration where the new stress is greater than the old. Therefore, several runs must be made starting at different points along the curve to ascertain the local and global minima of the function.

In this study, the lowest stress values obtained were 0.3777 in two dimensions and 0.3180 for three dimensions. As there was no appreciable difference, it was concluded that the data were essentially two-dimensional. Unfortunately, these dimensions remain uninterpretable, as it is difficult to see any continua in the generated map (cf., Table 9 and Figures 2a, b).

Hierarchical clustering was then employed to examine the finer details of the data (Johnson, 1967). This program, through successive collapsing of the matrix, generates two tree-like phenograms, each produced by a slightly different method. The first routine within Johnson's hierarchical clustering scheme is a connectedness method; the second is a diameter method. The assumption is that if both methods generate similar phenograms, then the perceptual space is hierarchical. This too failed as simple inspection of the phenograms will show (Table 9 and Figures 3a, b).

TABLE 9

Identification of Agencies for
MDS and Hierarchical Clustering

ID#	Agency
1	Career Opportunity Center
2	MESC - Unemployment Division
3	Lansing Legal Aid Bureau
4	Pine Lodge Halfway House
5	MESC - Manpower Division
6	Goodwill Industries
7	Juvenile Home
8	Vocational Rehabilitation
9	Lansing Police Department
10	Michigan Dept. of Corrections
11	Michigan Economic Opportunity Office
12	Shelter Home
13	Family Planning
14	United Way Information and Referral
15	Headstart
16	Big Brothers and Big Sisters
17	Ingham Co. Veterans Affairs
18	Senior Citizens Coordination & Information Center
19	Lansing N. A. Indian Center
20	Ingham Co. Dept. Soc. Serv.
21	Family and Child Services
22	Ingham Co. Probate Court
23	Beekman Center
24	Catholic Social Services
25	Cristo Rey Community Center
26	Lansing Senior Citizens
27	MSU Genetics Counseling Center
28	Sparrow Hospital
29	Maintenance & Detoxification Clinic
30	Red Cross
31	Ingham Co. Hypertension Clinic
32	CACHPA
33	Alcohol Prevention and Treatment
34	Model Cities Health Services
35	Visiting Nurses Association
36	Access Center for Women
37	Ingham Co. Health Department
38	Cristo Rey Adult Clinic
39	Michigan Association for Retarded Citizens
40	MSU Psychological Clinic
41	Drug Education Center
42	St. Lawrence Community Mental Health Center
43	MSU Psychiatric Service
44	Community Mental Health Programs for the Retarded
45	Michigan Dept. of Mental Health
46	St. Lawrence Alcohol Unit
47	Ingham Medical Comm. Mental Health Center
48	Open Door Crisis Center
49	St. Vincents Children's Home
50	Comprehensive Drug Treatment Program

```
DIMAX=2,DIMIN=2
MDSCAL DIAGNOSTIC. CONTROL CARD ABOVE IS IMPROPER.
ITEM NUMBER    1   HAS EXPECTED TYPE    1   AND ACTUAL TYPE   '1'. THIS ITEM IS DIMAX

RANDOM=13

PRINT=DISTANCE

ITERATIONS=30

DATA,LOWERHALFMATRIX,REGRESSION=DESCENDING,DIAGONAL ABSENT
MDS SORT DATA, LOWER TRIANGULAR, WITHOUT UNKNOWNS.
 50  1  1
(20F4.0)

COMPUTE
```

ON THE SHEPARD DIAGRAM THE ORIGINAL DATA (DATA) ARE PLOTTED ON THE Y AXIS AND DISTANCES (DIST,0) AND ESTIMATED DISTANCES (DHAT,X) ON THE X AXIS. A '+' INDICATES TWO VALUES ARE PLOTTED ON TOP OF EACH OTHER.

IDENTIFIERS FOR THE CONFIGURATION PLOT IN TWO DIMENSIONS ARE GIVEN BELOW:

MDSCL1 C:1256
PLTSC 0J1315

POINT IDENTIFICATION KEY

PT #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
CHAR	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
PT #	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
CHAR	Q	R	S	T	U	V	W	X	Y	Z	+	/	=	?	^	$	*	@	¢	<	(	)	[	≡	"

ALL POINT NUMBERS ABOVE 50 ARE DESIGNATED BY THE SYMBOL >

MULTIPLE POINTS AT THE SAME LOCATION ARE DESIGNATED BY THE SYMBOL }

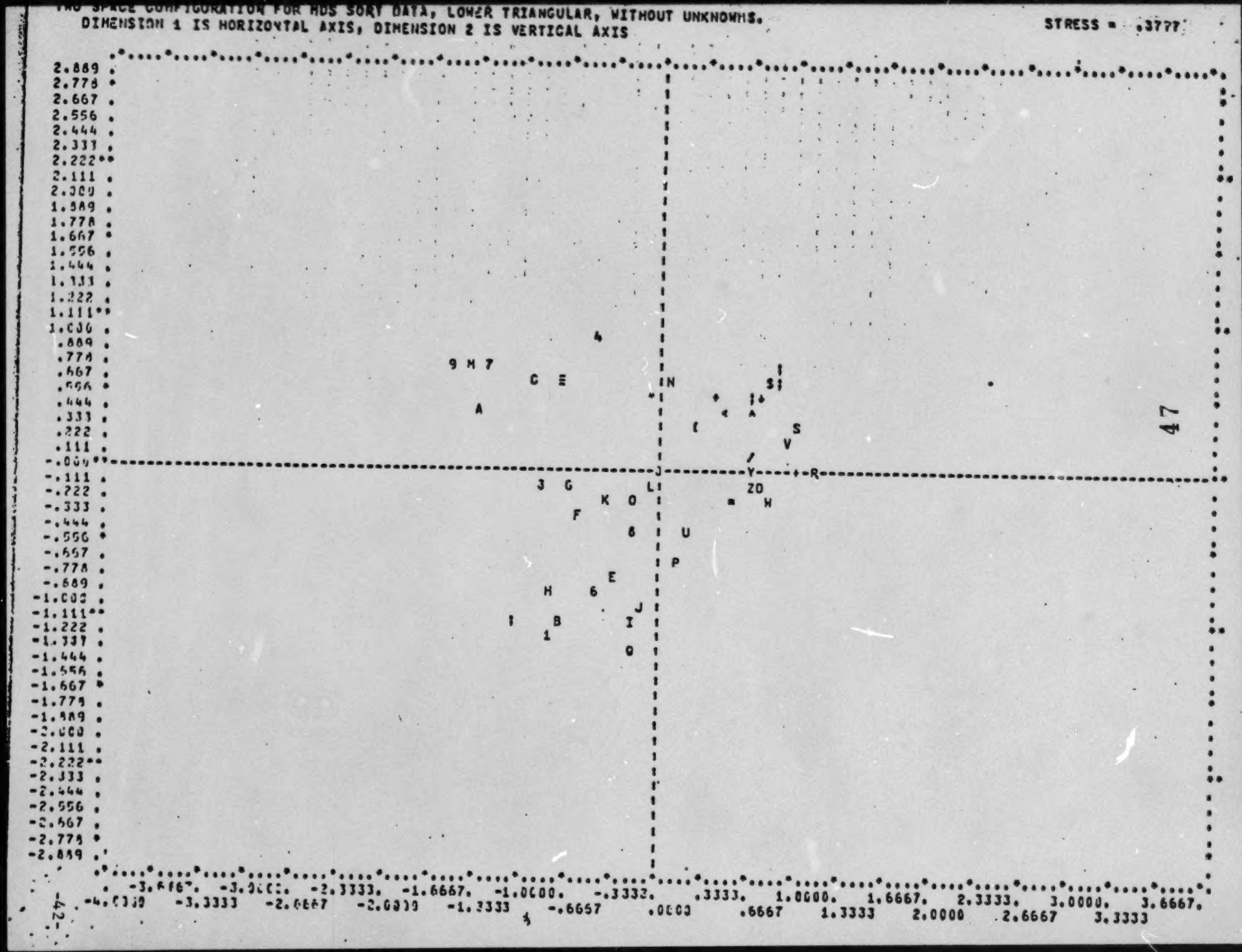

TWO SPACE CONFIGURATION FOR HOS SORT DATA, LOWER TRIANGULAR, WITHOUT UNKNOWNS.
DIMENSION 1 IS HORIZONTAL AXIS, DIMENSION 2 IS VERTICAL AXIS
STRESS = .3777
47

Figure 3-a

NSF AGENCY SORT WITHOUT UNKNOWNS--HIERARCHICAL CLUSTERING

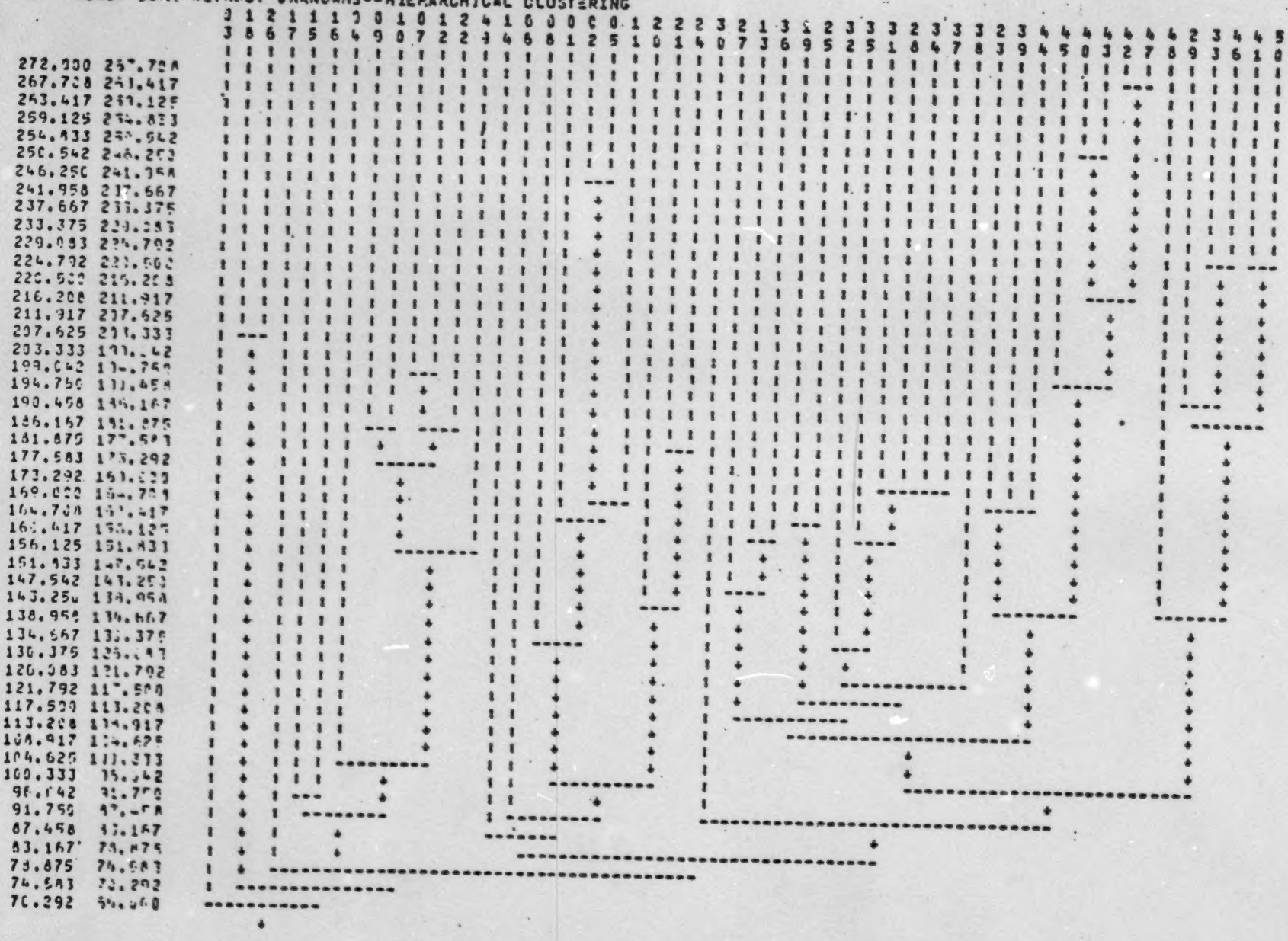
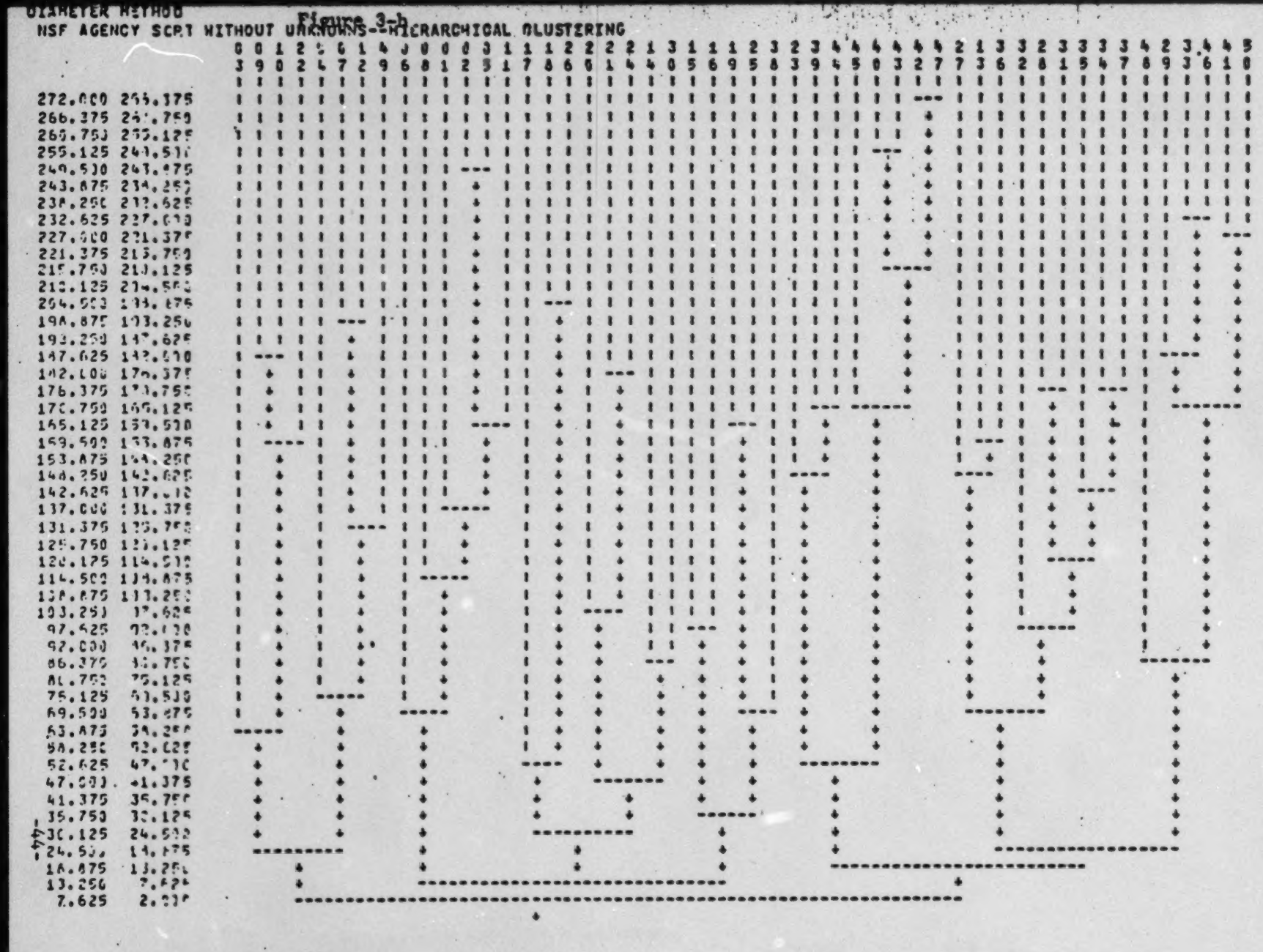


Figure 3-b



END-OF-FILE ENCOUNTERED, FILENAME: INPUT
ERROR NUMBER 0065 DETECTED BY INPUTC AT ADDRESS 00057
CALLED FROM HICLUST AT LINE 0063

ERROR SUMMARY:

Discussion and Conclusions

A high amount of inter-agency communication takes place in the Lansing metropolitan area studied and certain organizations emerge who are pivotal in their effectiveness: The Ingham County Health Department, the Ingham County Department of Social Services, and the Michigan Employment Security Commission are three. Currently, however, many agencies compete with one another for the same funding dollar. In addition, an attitude of protectiveness for the own agency and jealousy toward other agencies was frequently encountered by research team members in the field. As social problems increase in complexity, inter-agency cooperation becomes more difficult, and directors must spend more and more time keeping their own houses in order. These attitudes are understandable especially in the light of economic problems, but are not conducive to efficiently getting help to those who need it. Efforts have been made in both research and practice toward bridging communication gaps and simplifying the tasks of the helping professional.

A study of a successful effort at multiple-agency planning services (Aram and Stratton, 1974) found that convergence of interests and emergence in leadership roles of key persons from agencies with more immediate, more recent, and more numerous goals were factors most central to successful collaboration.

Merely selection of effective leaders, however, will not insure success. Constant input and feedback from sources close to the people must be maintained for the system to remain viable. Largely as a result of the federal enabling legislation of 1963, community mental health centers have often occupied a central position in the constellation of care-giving agencies. Despite widespread agreement about the need for integration of service

providers, two divergent models have characterized the involvement of community mental health units (Schulberg and Baker, 1970). The medical model presumes a mental health center under medical direction which has responsibility for and even supervision of the other mental health services which are seen basically as support services. Foley and Sanders (1966) schematically represent this arrangement by a circle of service providing agencies with a community mental health center at the hub.

The alternative human services model regards mental health as one of many community resources designed to serve the needs of the population. In this case, the community mental health center works jointly with multi-problem clients, cooperates in developing new programs, and attempts to minimize competition.

Because the multi-problem client is the rule rather than the exception, considerable thought has gone into the development of computerized recordkeeping. Efforts similar to those in Chattanooga, Tennessee, are underway in several U. S. cities, yet many smaller organizations will not reap their benefits due to lack of funds and/or expertise. Redundant records will continue to be kept. To improve communication and coordination it is recommended that terminals be made accessible to community agencies for purposes of case preparation and referral. It is also suggested that individual privacy and computer records need not be mutually exclusive.

The dangers raised by the storage of confidential information in data banks revolve around technical problems and ethical issues: who should have access to what kinds of information about what with what guarantees of accuracy? Once such parameters are decided, how can the system be provided with adequate physical security (Brooks, 1974)?

In this area as in many others, technological problems have yielded to solution faster than human problems. Baruch (1972) and Feistel (1973) have proposed a wide variety of methods for data collection, processing, and storage such as enciphering all materials for data banks and authenticating the legitimate origin of any command to the computer. Several proposals for a national registry of computerized data banks (Westin, 1971; Greenberger, 1971) have been advanced to develop mechanisms for solving problems in the security areas.

With regard to adequate safe-guards to prevent misuse of the data by individuals or organizations possessing it, Nagel (1952) states,

> The crucial question is not whether control of social transactions will be further centralized. The crucial question is whether despite such a movement, freedom of inquiry, freedom of communication and freedom to participate actively in decisions affecting our lives will be preserved and enlarged. It is good to be jealous of these rights; they are the substance of a liberal society. The probable expansion of automatic technology does raise serious problems concerning them. But it also provides fresh opportunities for the exercise of creative ingenuity and extraordinary wisdom in dealing with human affairs.

In conclusion, further research is not recommended. This study provides makers with sufficient information for directed distribution of social service funds as well as for the restructuring and organization of communication, coordination and referral efforts among social service agencies in the Lansing metropolitan area. Consolidation and application of current technology as well as relaxation, not in the service area but in the communication barriers dividing person from person, group from group, are recommended. Consistent checks on information flow by network analytic techniques could assess the impact of a new agency or program. Furthermore, hypotheses could be formulated about the expected effect of program innovation on social service delivery and data collected to verify the hypotheses (Nelson, 1974) for continued organizational and structural renewal. In a relatively short time span, it would be possible to derive the kind of information most useful to helping social service professionals in a decision-making capacity for needed interorganizational activities.

REFERENCES

Aiken, M. and Hage, J. Organizational interdependence and intra-organizational structure. American Sociological Review, 1968, 33, 912-930.

Allison, J. L. A legal service for social agencies. Social Work, 1973, 18, 103-104.

The Answer to Services Available in the Lansing Area. Lansing, Mi.: Lansing Model Cities and Community Planning Council, 1973.

Aram, John D. and Stratton, W. E. The development of inter-agency cooperation. Social Service Review, 1974, 48, 412-421.

Barnard, C. I. The Functions of the Executive. Cambridge, Mass.: Harvard University Press, 1938.

Barth, E. A. T. The causes and consequences of interagency conflict. Sociological Inquiry, 1963, 33, 51-57.

Baruch, R. F. Security of information processing--implications from social research. Fall Joint Computer Conference, 1973, 425-433.

Brooks, J. Data about people can be used for good or evil. Computers and People, 1974, 23, 31-32.

Burgess, J. H., Nelson, R. H., and Wallhaus, R. Network analysis as a method for the evaluation of service delivery systems. Community Mental Health Journal, 1974, 10, 337-344.

Coleman, J. S. Systems of social exchange. Journal of Mathematical Sociology, 1972, 2, 145-164.

Computer Digest, 1974, 4, 2-3. Cities under 200,000 can afford exclusive police computers.

Dinerman, M. G. The relations among child-serving agencies in one community. Social Service Review, 1972, 46, 445.

Farace, Richard V. and Wigand, Rolf T. The communication industry in economic integration: The case of West Germany. Paper presented to the International Communication Association, Chicago, April 1975.

Feistel, H. Cryptography and computer privacy. Scientific American, 1973, 228, 15-23.

Fellin, P. Issues in making decisions in a merger of agencies. Child Welfare, 1972, 51, 281-286.

Foley, A. R. and Sanders, D. S. Theoretical considerations for the development of the community mental health center concept. American Journal of Psychiatry, 1966, 122, 985-990.

Garfield, S. R. The delivery of social services. Social Science Review, 1973, 47, 449.

Greenberger, Martin (ed.). Computers, Communications and the Public Interest. Baltimore: The Johns Hopkins University Press, 1971.

Gummer, B. The effects of patterns of interorganizational relations on the delivery of social services. Social Service Review, 1973, 47, 449.

Hage, J. Communication and Organizational Control, Cybernetics in Health and Welfare Settings. New York: Wiley, 1974.

Hill, E. B. Social work as a mechanism to accelerate social change. Applied Social Studies, 1970, 2, 165-169.

Hutcheson, Bellendon R. and Krause, E. A. System analysis and mental health. Community Mental Health Journal, 1969, 5, 29-45.

Kane, T. J. A study of the interorganizational relationships of CMH centers and family service agencies. Social Service Review, 1972, 46, 454-455.

Konopka, G. Coordination of services as a means of delinquency prevention. Annals of the American Academy, 1959, 322, 30-37.

Krueckenberg, D. A. Variations in behavior of planning agencies. Administrative Science Quarterly, 1971, 16, 192-202.

Lansing Planning Department. Human Services Integration--The Lansing Experience. Lansing, Michigan, 1973.

Levine, S. and White, P. Exchange as a conceptual framework. Administrative Science Quarterly, 1961, 5, 583-601.

Levine, S. White, P., and Paul, D. Community and interorganizational problems in providing medical care and social services. In R. Kramer and H. Specht (eds.), Readings in Community Organization Practice. Englewood Cliffs, N. J.: Prentice-Hall, 1969.

Litwak, E. and Hylton, L. Inter-organizational analysis: Hypothesis on coordination. Administrative Science Quarterly, 1962, 6, 395-420.

Long, N. Information and referral: A short history and recommendation. Social Service Review, 1973, 47, 49-62.

McCullough, W. T. Designing a continuum of services to meet the needs of individuals and families. Paper presented at meeting of Council on Social Work Education, 1959.

Michigan Department of Management and Budget. Primary Questions and Issues Concerning the Proposed Department of Human Services. Lansing, Michigan, February 6, 1974.

Morris, R. New Concepts in Community Organization. The Social Welfare Forum, 1962. New York: Columbia University Press, 1962.

Nagel, E. Automatic control. Scientific American, 1952, 187, 44-47.

Nelson, Ronald H. Accountants 1, Psychologists 0. Paper presented at National Conference on Evaluation in Alcohol, Drug Abuse, and Mental Health Programs. Washington, D.C., April, 1974.

Nelson, R. H. and Burgess, J. H. An open adaptive systems analysis of community mental health services. Social Psychiatry, 1973, 8, 192-197.

Nelson, R. H. and Johnson, L. The role of evaluation in community mental health programs. Community Development Journal, 1974, 9, 145-149.

Nelson, R. H. and Lockert, E. A Systems Analysis of the Mental Health Agencies in Nashville, Tennessee. Nashville, Tenn.: Center for Community Studies, 1970.

Pfeffer, J. Merger as a response to organizational independence. Administrative Science Quarterly, 1972, 17, 382-394.

Reid, W. Inter-organizational coordination in social welfare: A theoretical approach to analysis and intervention. In R. Kramer and H. Specht (eds.), Readings in Community Organization Practice. Englewood Cliffs, N. J.: Prentice-Hall, 1969.

Rice, R. M. Organizing to innovate in social work. Social Casework, 1973, 4, 20-26.

Richards, W. D. A modern algorithm used for the computation of network analysis. Unpublished paper, Michigan State University, Department of Communication, 1971.

Richards, W. D.; Farace, R. V.; and Danowski, J. A. NEGOPY--Communication network analysis program description. Unpublished paper, Michigan State University, Department of Communication, 1972.

Schulberg, Herbert C. and Baker, F. The caregiving system in community mental health programs: An application of open-systems theory. Community Mental Health Journal, 1970, 6, 437-446.

Tryon, R. C. Cluster Analysis. Ann Arbor, Mi.: Edwards Brothers, Inc., 1939.

Tryon, R. C. and Bailey, D. E. Cluster Analysis. New York: McGraw-Hill, 1970.

Weber, M. The essentials of bureaucratic organization: An ideal type construction. In R. K. Merton, et al. (eds.), Reader in Bureaucracy. Glencoe, Ill.: The Free Press, 1952.

Westin, A. F. Civil Liberties and computerized data systems in Martin Greenberger (ed.), Computers, Communications, and the Public Interest. Baltimore, Md.: The Johns Hopkins University Press, 1971.

Wigand, Rolf T. A dynamic model of communication and inter-organizational relationships among complex organizations. A paper to be presented to the VIIIth International Cybernetics Congress, Association Internationale de Cybernétique, Namur, Belgium, September 1976(a).

Wigand, Rolf T. A dynamic model of interactions among complex organizations within an organization-set. A paper presented to the third European Meeting on Cybernetics and Systems Research, Symposium F: Cybernetics in Organization and Management, Vienna, Austria, April 1976(b), and in Proceedings of the European Meeting on Cybernetics and Systems Research 1976. Washington, D.C.. Hemisphere Publishing, forthcoming.

Wigand, Rolf T. A model of interorganizational communication among complex organizations. Proceedings of the American Society for Cybernetics, 1975, in press.

Wigand, Rolf T. Communication, integration and satisfaction in a complex organization. Paper presented to the International Communication Association, New Orleans, April 1974(a).

Wigand, Rolf T. Communication network analysis: A computerized approach toward the engineering of systems and organizations. A paper presented to the II Interamerican Conference on Systems and Informatics, Mexico City, November, 1974(b).

Wigand, Rolf T. Interorganizational communication among complex organizations. Paper presented to International Communication Association, New Orleans, April, 1974(c).

Winer, I. K. Coordination of services. Social Service Review, 1972, 46, 263-266.

Wirth, L. Urbanism as a way of life. In R. L. Warren (ed.), Perspectives On The American Community. Chicago: Rand McNally, 1966.

APPENDIX I

(Sample Network Questionnaire and

Tables 3, 5 through 8)

PERSONAL CONTACT CHECKLIST INSTRUCTIONS

1. On the attached checklist are spaces for information about your communication with members of other Lansing area agencies. You will be asked: how frequently, in general, have you communicated with members of the listed agencies during the last year, how important is this communication, what is the general function that your contact serves?

2. Communication among members of social service organizations typically falls into three main categories: (a) direct treatment and social service delivery, (b) planning and innovation, and (c) interpersonal relations. On the following pages you will find these three categories listed along with a short description of each.

3. "Communication" includes face-to-face conversation, formal or informal meetings, memos, letters, intercom, telephone conversations, etc. with any member, including volunteer and clerical personnel. (a) First, you will be asked to read the name of the first listed agency--in our example below--JOHN DOE FOUNDATION (05). If you have never contacted this agency during the last year, place an "X" into the first column labeled "NEVER CONTACTED AT ALL". (b) If you have communicated with this agency about "DIRECT TREATMENT/SERVICE DELIVERY," then ask yourself how often you have communicated with this agency according to the following scheme: (1) once a day or more often, (2) once or twice a week, (3) once or twice a month, (4) once or twice every three months. Once you have made your decision, place an "X" in the appropriate cell in the section labeled DIRECT TREATMENT/SERVICE DELIVERY. (c) Next, please ask yourself how important you consider this communication to be. To answer this question, place a number from 1 to 5 in the "IMPORTANCE" column; note that a "1" indicates 'low importance' and a "5" indicates 'high importance'. (d) Then go to the next section, PLANNING/INNOVATION, and repeat the above steps, etc. Your communication with an agency may include all three topic areas, any two, only one or none at all.

4. Below is an example how to do this part of the questionnaire. In each case, use the best possible answer: THERE IS NO SINGLE CORRECT ANSWER TO ANY QUESTION.

EXAMPLE:

WITH WHICH ORGANIZATIONS DO YOU COMMUNICATE ABOUT . . .	NEVER CONTACTED AT ALL	With which organization do you communicate about ... DIRECT TREATMENT/SERVICE DELIVERY: (e.g., casework consultation, referrals, information, etc.) HOW OFTEN? (Check one column) ONCE A DAY OR MORE	ONCE OR TWICE A WEEK	ONCE OR TWICE A MONTH	ONCE OR TWICE EVERY THREE MONTHS	HOW IMPORTANT IS THIS COMMUNICATION? IMPORTANCE 1 2 3 4 5 low high (Enter the appropriate number)	With which organization do you communicate about ... PLANNING/INNOVATION: (e.g., new programs, in-service training joint activities, outreach efforts, budgeting, PR, etc.) HOW OFTEN? (Check one column) ONCE A DAY OR MORE	ONCE OR TWICE A WEEK	ONCE OR TWICE A MONTH	ONCE OR TWICE EVERY THREE MONTHS	HOW IMPORTANT IS THIS COMMUNICATION? IMPORTANCE 1 2 3 4 5 low high (Enter the appropriate number)	With which organization do you communicate about ... INTERPERSONAL RELATIONS: (e.g., maintaining contacts, purely social conversations, etc.) HOW OFTEN? (Check one column) ONCE A DAY OR MORE	ONCE OR TWICE A WEEK	ONCE OR TWICE A MONTH	ONCE OR TWICE EVERY THREE MONTHS	HOW IMPORTANT IS THIS COMMUNICATION? IMPORTANCE 1 2 3 4 5 low high (Enter the appropriate number)
JOHN DOE FOUNDATION (05)			X			3			X		1						
MAIN STREET CLINIC (57)		X				5									X	4	

TABLE 3

Results of O-Analysis: O-Types

O-Type	Agency Name
1	Career Opportunity Center Human Rights Center Lansing Police Department Mich. Econ. Opportunity Center United Way Info. and Referral Lansing N. A. Indian Center Cristo Rey Community Center Lansing Senior Citizens Mich. Assoc. for the Retarded Mich. Council on Crime & Delinquency Lansing Parole Office Metro Narcotics Squad National Alliance of Businessmen Early Periodic Screening, Detect., & Treat.
2	Ingham County Jail New Way In Inc.
3	MSU Psychiatric Service MSU Counseling Center March of Dimes, Pre-Natal Muscular Dystrophy
4	Goodwill Industries Access Center for Women Alano Club Recovery, Inc. St. Vincents Children's Home Ingham Co. Extended Care Alcohol and Drug Info. Center Williamston Center for Human Development Camp Highfields for Boys

TABLE 3 (continued)

Results of O-Analysis: O-Types

O-Type	Agency Name
5	Lansing Legal Aid
	Pine Lodge Halfway House
	Vocational Rehabilitation
	Family Planning Center
	Big Brothers & Big Sisters
	Ingham Co. Veterans Affairs
	Mid-Mich. Red Cross
	CACHPA
	Probation Department
	Eaton County Dept. of Social Services
	Listening Ear
	Services to Crippled Children
6	St. Lawrence Alcohol Unit
	St. Lawrence Phys. Med. & Rehabilitation
	Sparrow Hospital Social Services
	Ingham General Medical Facility
	Holden House
7	Mich. Employment Security Commission
	Riverside State Hospital
	Services for the Blind
8	Senior Citizens Coordinating Committee
	Ingham Co. Probate Court
	Neighborhood Youth Corps
	Family Helpers
9	Family & Child Services
	Catholic Social Services
	Genetics Counseling Center
	Visiting Nurses Assoc.
	MSU Psychological Clinic
	Assoc. for Better Hearing & Speech
	Sparrow Rehab. Medical Center
	Eaton Co. Juvenile Court
	MSU Audiology & Speech Clinic
Reject 1	Project Reach Out
Reject 2	Ingham Co. Health Dept.
Reject 3	Ingham Co. Dept. of Social Services

A-I-3

TABLE 5

Aggregate Network*

	Internal Linkage	External Linkage	Balanced Linkage
Group Number 1: Connectedness = .2615			
Lansing Legal Aid	.2800+**	.0462	.7000
Lansing Police Department	.1600	.0769+	.4444
Family Planning Center	.2000	.0462	.6250
Headstart	.2800+	.0154	.8750
Big Brothers & Big Sisters	.1600	.0154	.8000
Senior Cit. Coord.	.5200+***	.0769+	.7222
Ingham County DSS	.7200+	.1385+	.6667
Family and Child Services	.2000	.0769+	.5000
Ingham Probate Court	.3600+	.1077+	.5625
Catholic Social Services	.3600+	.0308	.8182
Cristo Rey Community Center	.4000+	.0615+	.7143
Lansing Senior Citizens	.2400	.0000	1.0000
CACHPA	.1600	.0462	.5714
Model Cities Health	.2800+	.0154	.8750
Visiting Nurses Assoc.	.2800+	.0615+	.6364
St. Vincents Children's Home	.1600	.0308	.6667
Neighborhood Youth Corps	.4400+	.0769+	.6875
Sparrow Social Services	.0800	.0308	.5000
Ingham General Medical Fac.	.1200	.0308	.6000
EPDS + T	.0800	.0000	1.0000
Family Helpers	.2800+	.0154	.8750
Operation Mainstream	.2000	.0308	.7143
Career Opportunity Center	.1200	.0308	.6000
Youth Development CO	.1200	.0462	.5000
Ingham Co. Extended Care	.0400	.0154	.5000
Ingham Health Department	.5600+	.2615+	.4516

* The aggregate network constitutes the combination of communication across all three functional topic areas: direct service/treatment, planning innovations, and interpersonal relations.

** A plus sign (+) next to this internal linkage score of an agency indicates that its score is higher than the average score. Consequently, that agency has a more active role in communication that occurs among group members. Similarly, a plus after an external linkage score indicates a more active than average role in communication between group and the rest of the agencies.

*** An agency with a plus sign next to both scores, i.e., Internal as well as External Linkage, communicates quite frequently with a variety of agencies and thus may be considered a focal point in the flow of communication among agencies.

Table 5 (con't)	Internal Linkage	External Linkage	Balanced Linkage
Group 2: Connectedness = .3571			
Vocational Rehabilitation	.4286+	.1205+	.2308
Ingham Co. Veterans Affairs	.2857	.0723+	.2500
St. Lawrence CMHC	.7143+	.0964+	.3846
St. Lawrence Alcohol	.5714+	.1446+	.2500
Comp. Drug Treatment	.2857	.0361	.4000
Muscular Dystrophy	.1429	.0120	.5000
Riverside State Hospital	.1429	.0120	.5000
Alcohol & Drug Information	.2857	.0000	1.0000
Group 3: Connectedness = .4000			
Ingham Juvenile Home	.7500+	.1628+	.1765
Ingham Shelter Home	.2500	.0233	.3333
Sparrow Hospital	.5000+	.0930+	.2000
Eaton Juvenile Court	.2500	.0116	.5000
Sparrow Rehab. Medical Center	.2500	.0116	.5000
Group 4: Connectedness = .6667			
United Way Info. & Referral	1.0000+	.0795+	.2222
Red Cross Mid-Michigan	.5000	.0114	.5000
CMH Prog. for Retard.	.5000	.0114	.5000
Group 5: Connectedness = 0			
Human Rights Center	.0000	.0341+	.0000
Eaton County DSS	.0000	.0227	.0000
Listening Ear	.0000	.0227	.0000
Group 6: Connectedness = 0			
Mi. Econ. Opportunity Office	.0000	.0476+	.0000
Genetics Couseling	.0000	.0238	.0000
Alcohol prevention	.0000	.0476+	.0000
Sol De Aztlan	.0000	.0357+	.0000
Cristo Rey Adult Clinic	.0000	.0238	.0000
Services Crippled Child	.0000	.0238	.0000
Camp Highfields	.0000	.0238	.0000
Group 7: Connectedness = .3810			
MESC Unemployment	.3333	.0238	.5000
MESC Manpower	.3333	.0595+	.2857
AFL-CIO Human Resource Center	.1667	.0238	.3333
MI. Dept. of Correction	.3333	.0357+	.4000
House of Commons	.1667	.0238	.3333
Natl. Alliance of Businessmen	.6667+	.0119	.8000
Parole Office	.6667+	.0357+	.5714

Table 5 (con't)	Internal Linkage	External Linkage	Balanced Linkage

Isolates:

Goodwill Industries
Maintenance & Detoxification Clinic
MSU Psychological Clinic
Recovery, Inc.
Open Door Crisis Center
School for the Blind
March of Dimes, Pre-Natal Clinic
Mich. Council on Crime & Delinquency
Probation Department
Williamston Center for Human Development
Pine Lodge Halfway House
Lansing N. A. Indian Center
Lansing Regional Inter-Agency Coord. Comm.
Hypertension Clinic
MSU Counseling Center
Project Reach-Out
Assoc. for Better Hearing & Speech
Metro. Narcotics Squad
Services for the Blind
MSU Audiology & Speech Center

Liaisons:	Between Groups:
Access Center for Human Reproduction	1 & 5
Mich. Assoc. for Retarded Citizens	1 & 4
Drug Education Center	1, 2, 3, & 5
Ingham Medical Comm. Mental Health Cntr.	1, 2, & 3
Ingham County Jail	1, 2, 6, & 7
St. Lawrence Physical Medicine	1, 2, & 3
New Way In, Inc.	1, 2, & 7
Holden House	1, 2, 4, 6, & 7

Others:

Beekman Center
Alano Club
MSU Psychiatric Service
Department of Mental Health

TABLE 6

Planning/Innovation Network

	Internal Linkage	External Linkage	Balanced Linkage
Group 1: Connectedness = .3000			
Lansing Legal Aid	.2000	.0400	.5000
Operation Mainstream	.2667	.0267	.6667
Lansing Police Dept.	.2667	.0533	.5000
MI. Econ. Opportunity Office	.2000	.0400	.5000
Headstart	.4000+	.0267	.7500
Ingham County DSS	.4667+	.1733+	.3500
Ingham Probate Court	.5333+	.0400	.7273
Catholic Social Services	.2667	.0533	.5000
Cristo Rey Community Center	.2000	.0667+	.3750
St. Lawrence Alcohol	.3333+	.1467+	.3125
Ingham Medical CMCH	.2667	.0400	.5714
New Way In, Inc.	.4667+	.1067+	.4667
Family and Child Services	.1333	.0267	.5000
Senior Citizen Coord.	.6000+	.1067+	.5294
AFL-CIO Human Resource Center	.0667	.0133	.5000
Career Opportunity Center	.1333	.0267	.5000
Group 2: Connectedness = .4000			
MESC Unemployment	.2500	.0233	.3333
House of Commons	.5000+	.0233	.5000
Comprehensive Drug Treatment	.2500	.0349	.2500
Ingham County Jail	.5000+	.0698+	.2500
Parole Office	.5000+	.0581+	.2857
Group 3: Connectedness = 0			
Genetics Counseling Center	.0000	.0568+	.0000
Alcohol Prevention	.0000	.0455+	.0000
Sol De Aztlan	.0000	.0341	.0000
Group 4: Connectedness = .5000			
CACHPA	1.0000+	.1264+	.2143
Model Cities Health	.3333	.0575	.1667
Visiting Nurses Assoc.	.3333	.0805	.1250
St. Lawrence CMHC	.3333	.0690	.1429
Group 5: Connectedness = .4000			
Human Rights Center	.2500	.0349	.2500
Ingham Juvenile Home	.7500+	.1163+	.2308
Ingham Shelter Home	.2500	.0349	.2500
Drug Education Center	.5000+	.0349	.4000
St. Vincents Home	.2500	.0116	.5000

Table 6 (con't)	Internal Linkage	External Linkage	Balanced Linkage
Group 6: Connectedness = 0			
Youth Development Corp.	.0000	.0682+	.0000
MESC Manpower	.0000	.0682+	.0000
Lansing Senior Citizens	.0000	.0341	.0000
Group 7: Connectedness = .6667			
United Way Info. & Referral	1.0000+	.1023+	.1818
Big Brothers & Big Sisters	.5000	.0227	.3333
Red Cross Mid-Michigan	.5000	.0114	.5000
Group 8: Connectedness = .5000			
Sparrow Hospital	1.0000+	.0345+	.5000
St. Lawrence Phys. Med. & Rehab.	.3333	.0115	.5000
Sparrow Rehab Medical Center	.3333	.0115	.5000
Services Crippled Child	.3333	.0115	.5000
Group 9: Connectedness = 0			
Pine Lodge Halfway House	.0000	.0238	.0000
Alano Club	.0000	.0238	.0000
Neighborhood Youth Corps.	.0000	.0476+	.0000
Sparrow Social Services	.0000	.0238	.0000
Muscular Dystrophy	.0000	.0595+	.0000
Ingham General Medic.	.0000	.0357+	.0000
Early Periodic Screening, Detection & Treatment	.0000	.0238	.0000

Isolates:

Goodwill Industries
Lansing N. A. Indian Center
Access Center for Human Reproduction
MSU Psychological Clinic
Recovery Inc.
Open Door Crisis Center
MSU Counseling Center
School for the Blind
Project Reach-Out
March of Dimes, Pre-Natal Clinic
Association for Better Hearing and Speech
Alcohol and Drug Information
Crime and Delinquency Council
Probation Department

Table 6 (con't)

Isolates (con't)

Listening Ear
Williamston Center for Human Development
Maintenance and Detoxification Clinic
Hypertension Clinic
Cristo Rey Adult Clinic
MSU Psychiatric Services.
Ingham Extended Care Facility
Eaton Juvenile Court
Eaton County Dept. of Social Services
Metro. Narcotics Squad
MSU Audiology and Speech
Camp Highfields

Liaisons	Between Groups:
Vocational Rehabilitation	5, 1, 7, 4, 2 & 9
Michigan Department of Correction	1 & 2
Family Planning Center	5, 1, 3, 4, 9 & 2
Ingham Health Department	9, 5, 1, 6, 3, 4, 2 & 8
Riverside State Hospital	1 & 4
Natl. Alliance of Bussinessmen	1 & 6
Family Helpers	1 & 4
Holden House	2, 6, 7, 1, 3 & 9

Others:

Veterans Administration
Beekman Center
Lansing Reg. Inter-Agency Coord. Committee
Michigan Association for the Retarded
Community Mental Health Program for Retarded Children
Department of Mental Health
Services for the Blind

TABLE 7

Interpersonal Relations Network

	Internal Linkage	External Linkage	Balanced Linkage
Group 1: Connectedness = .3333			
United Way Info. & Referral	.1667	.0714+	.1429
Ingham County DSS	.5000+	.1429+	.2000
Cristo Rey Community Center	.8333+	.1071+	.3571
Alcohol Prevention	.1667	.0357	.2500
Cristo Rey Adult Clinic	.1667	.0119	.5000
Family Helpers	.3333+	.0476	.3333
Ingham Extended Care	.1667	.0119	.5000
Group 2: Connectedness = .5000			
Career Opportunity Center	.5000+	.0233	.5000
Lansing Legal Aid	.2500	.0930	.1111
Operation Mainstream	.5000+	.0349	.4000
AFL-CIO Human Resource Center	.2500	.0116	.5000
Neighborhood Youth Corps.	1.0000+	.0581+	.4444
Group 3: Connectedness = .5000			
House of Commons	.6667	.0115	.6667
Comprehensive Drug Treat. Cntr.	.3333	.0345+	.2500
Ingham County Jail	.6667+	.0690+	.2500
Parole Office	.3333	.0230	.3333
Group 4: Connectedness = .6667			
CACHPA	1.0000+	.0909+	.2000
Model Cities Health	.5000	.0341	.2500
Visiting Nurses Association	.5000	.0682+	.1429
Group 5: Connectedness = .5000			
Human Rights Center	.2500	.0116	.5000
Michigan Econ. Opportunity Of.	.7500+	.0000	1.0000
Headstart	.5000+	.0465+	.3333
Senior Citizens Coord. Comm.	.7500+	.1047+	.2500
Lansing Senior Citizens	.2500	.0465+	.2000

Table 7 (con't)	Internal Linkage	External Linkage	Balanced Linkage
Group 6: Connectedness = .3333			
Sol De Aztlan	.0000	.0455+	.0000
Access Center for Human Devel.	.5000+	.0114	.5000
Drug Education Center	.5000+	.0568+	.1667
Group 7: Connectedness = 0			
Ingham Shelter Home	.0000	.0465+	.0000
Family Planning Center	.0000	.0581+	.0000
Sparrow Hospital	.0000	.0465+	.0000
Crime & Delinquency Council	.0000	.0349	.0000
Ingham General Medical Facility	.0000	.0233	.0000

Isolates:

Goodwill Industries
Genetics Counseling Center
Lansing Reg. Interagency Coordinating Committee
Maintenance and Detoxification Clinic
Red Cross Mid-Michigan Chapter
Recovery, Inc.
Open Door Crisis Center
MSU Counseling Center
School for the Blind
Project Reach-Out
March of Dimes, Pre-Natal Clinic
Association for Better Hearing and Speech
St. Lawrence Physical, Medical & Rehab.
Alcohol and Drug Information Center
Probation Department
Eaton Juvenile Court
Williamston Center for Human Development
Sparrow Social Services
Services for the Blind
Michigan Employment Security Commission
Pine Lodge Halfway House
Big Brothers & Big Sisters
Lansing No. American Indian Center
Hypertension Clinic
MSU Psychological Clinic
Sparrow Medical Center
Eaton County Dept. of Social Services
Listening Ear
Services for Crippled Children
Metro. Narcotics Squad

Table 7 (con't)

Isolates (con't)

Natl. Alliance of Businessmen
Early Periodic Screening, Detection, and Treatment
MSU Audiology and Speech
Camp Highfields

Liaisons:	Between Groups:
Youth Development Council	2, 5 & 3
Lansing Police Department	7, 1 & 3
Michigan Department of Correction	2, 3 & 7
Catholic Social Services	1, 2, 7, 5 & 4
Ingham Health Department	7, 5, 1, 4 & 6

Others:

Michigan Employment Security Commission
Ingham Juvenile Home
Vocational Rehabilitation
Veterans Administration
Family and Child Services
Ingham Probate Court
Michigan Association for the Retarded
Alano Club
St. Lawrence Comm. Mental Health Center
MSU Psychiatric Services
Comm. Mental Health Programs for the Retarded
Department of Mental Health
St. Lawrence Alcohol Unit
Ingham Medical Comm. Mental Health Center
Riverside State Hospital
St. Vincents Home
Muscular Dystrophy
New Way In, Inc.
Holden House

TABLE 8

Referral Network

	Internal Linkage	External Linkage	Balanced Linkage
Group 1: Connectedness = .2294			
Career Opportunity Center	.1905	.0580	.5000
Michigan Unemployment Sec. Comm.	.2857+	.0580	.6000
Lansing Legal Aid	.1429	.1449+	.2308
Youth Development Council	.1905	.0725+	.4444
Vocational Rehabilitation	.5238+	.0870+	.6471
Lansing Police Department	.2381+	.0580	.5556
Veterans Administration	.3810+	.0580	.6667
Lansing No. Amer. Indian Cntr.	.1905	.1304+	.3077
Ingham Probate Court	.4286+	.1304+	.5000
Catholic Social Services	.0952	.0870+	.2500
St. Lawrence Comm. Mental Health Center	.1905	.0870	.4000
St. Lawrence Alcohol Unit	.2381+	.0435	.6250
Ingham Medical Comm. Mental Health Center	.1429	.0870+	.3333
Natl. Alliance of Businessmen	.0952	.0435	.4000
Ingham County Jail	.3333+	.0145	.8750
Probation Department	.1429	.0000	1.0000
Comprehensive Drug Treatment	.1429	.0000	1.0000
Parole Office	.2857+	.0145	.8571
Michigan Dept. of Correction	.1905	.0000	1.0000
House of Commons	.1429	.0000	1.0000
New Way In, Inc.	.3810+	.1159+	.5000
Metro. Narcotics Squad	.0952	.0000	1.0000
Group 2: Connectedness = .3333			
Ingham Juvenile Home	.4000+	.1882+	.1111
Ingham Shelter Home	.2000	.0353	.2500
Sparrow Hospital	.4000+	.0588	.2857
Visiting Nurses Association	.4000+	.0824+	.2222
Ingham Extended Care Facility	.4000+	.0235	.5000
Muscular Dystrophy	.2000	.0118	.5000
Group 3: Connectedness = .4000			
Model Cities Health Dept.	.2500	.0814+	.1250
Ingham Health Department	.7500+	.1279+	.2143
Ingham General Medical Facility	.2500	.0465	.2000
Early Periodic Screening, Detection and Treatment	.2500	.0233	.3333
Family Helpers	.5000+	.0930+	.2000

Table 8 (con't)	Internal Linkage	External Linkage	Balanced Linkage
Group 4: Connectedness = .2500			
AFL-CIO Human Resource Center	.1429	.0361	.2500
Family Planning Center	.8571+	.1084+	.4000
Genetics Counseling	.1429	.0120	.5000
Michigan Assoc. for the Retarded	.1429	.0241	.3333
March of Dimes, Pre-Natal Clinic	.1429	.0241	.3333
Neighborhood Youth Corps.	.2857+	.1687+	.1250
Eaton Co. Dept. of Soc. Ser.	.1429	.0361	.2500
Listening Ear	.1429	.0602+	.1667
Group 5: Connectedness = 0			
Human Rights Center	.0000	.1205+	.0000
Big Brothers & Big Sisters	.0000	.0361	.0000
Sol De Aztlan	.0000	.0241	.0000
Access Center for Women	.0000	.0241	.0000
Assoc. for Better Hearing & Spe.	.0000	.0241	.0000
Eaton Juvenile Court	.0000	.0241	.0000
Services to Crippled Children	.0000	.0241	.0000
MSU Audiology and Speech	.0000	.0241	.0000

Isolates:

Pine Lodge Halfway House
Lansing Reg. Interagency Coord. Committee
Maintenance and Detoxification Clinic
CACHPA
Alcohol Prevention and Treatment
MSU Psychiatric Services
Recovery, Inc.
Open Door Crisis Center
MSU Counseling Center
School for the Blind
Project Reach-Out
St. Lawrence Phys. Med. and Rehab.
Alcohol and Drug Information Center
Crime and Delinquency Council
Holden House
Goodwill Industries
United Way Information and Referrals
Red Cross Mid-Michigan Chpt.
Alano Club
Comm. Mental Health Program for the Retarded
Department of Mental Health

Table 8 (con't)

Isolates (continued)

Riverside State Hospital
Sparrow Rehabilitation Medical Center
Williamston Center for Human Development
Services for the Blind
Camp Highfields

Liaisons:	Between Groups:
Michigan Employment Security Commission	1, 3 & 4
Operation Mainstream	1, 6 & 4
Michigan Economic Opportunity Office	1, 5 & 6
Senior Citizens Coord. Comm.	1, 6, 3 & 2
Ingham County Dept. of Social Services	1, 5, 2, 4 & 3
Family and Child Services	5, 2, 4 & 1
Drug Education Center	5, 2, 4 & 1
St. Vincents Children's Home	1, 2 & 5
Sparrow Social Services	1, 2, 4, 6 & 3

Others:

Lansing Senior Citizens
Hypertension Clinic

APPENDIX II

(Figures 1a through 1z)

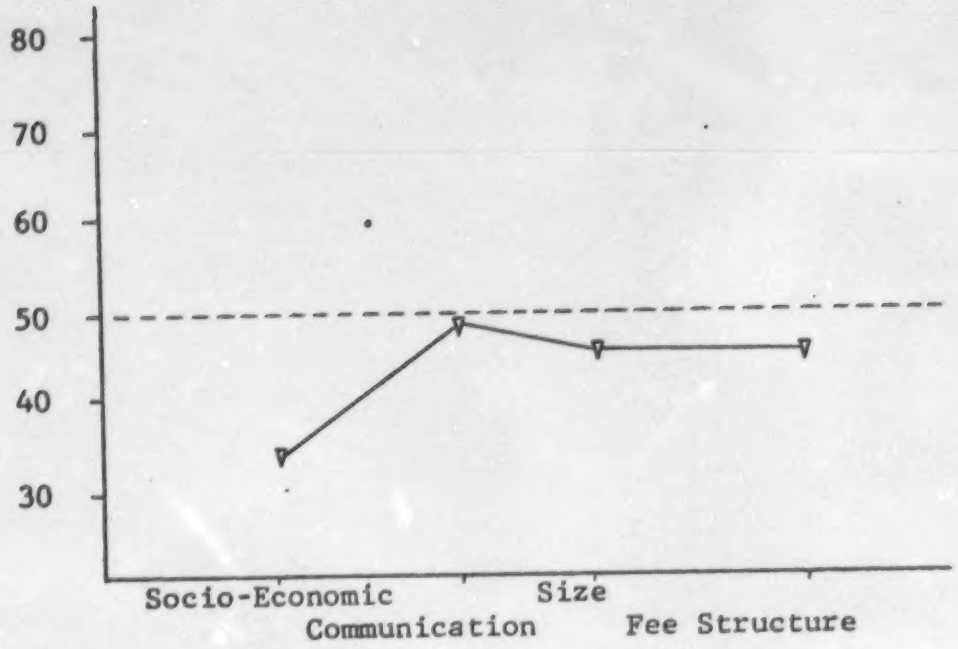


Fig. 1a: Profile of O-Type 1

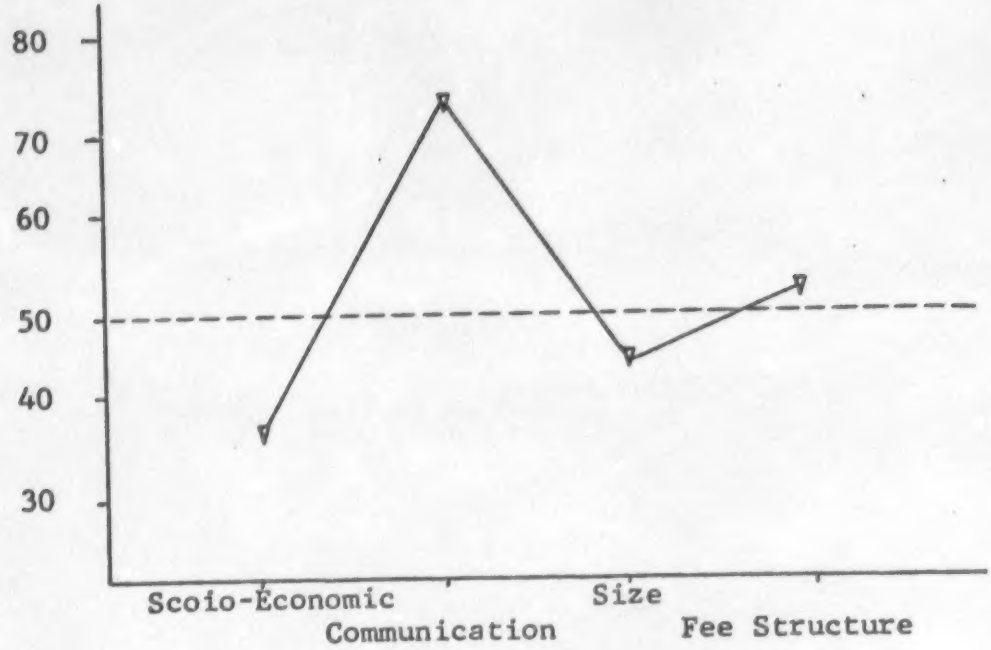


Fig. 1b: Profile of O-Type 2

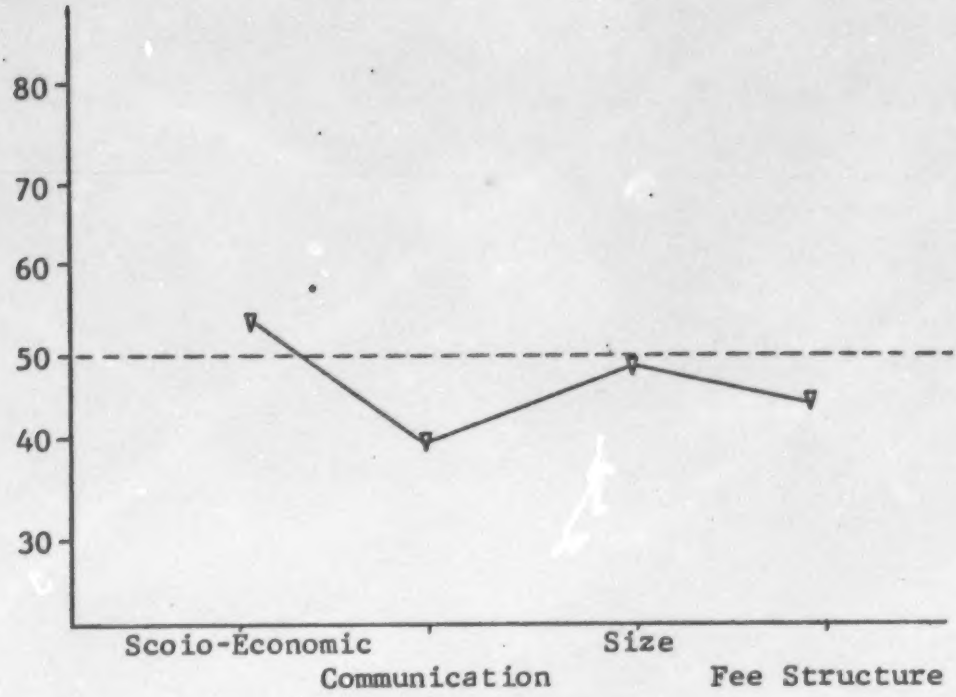


Fig. 1c: Profile of O-Type 3

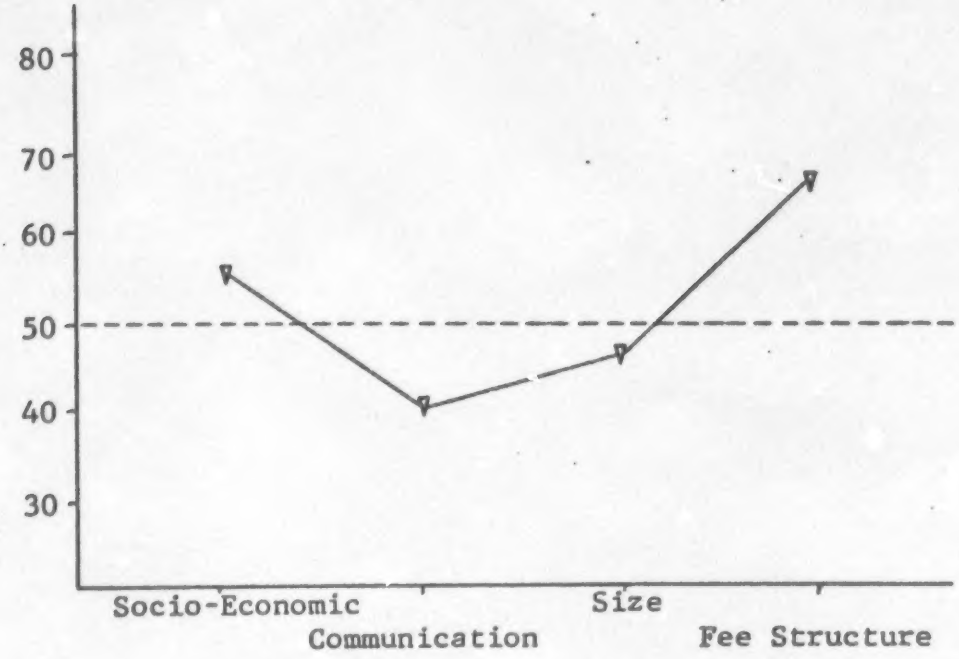


Fig. 1d: Profile of O-Type 4

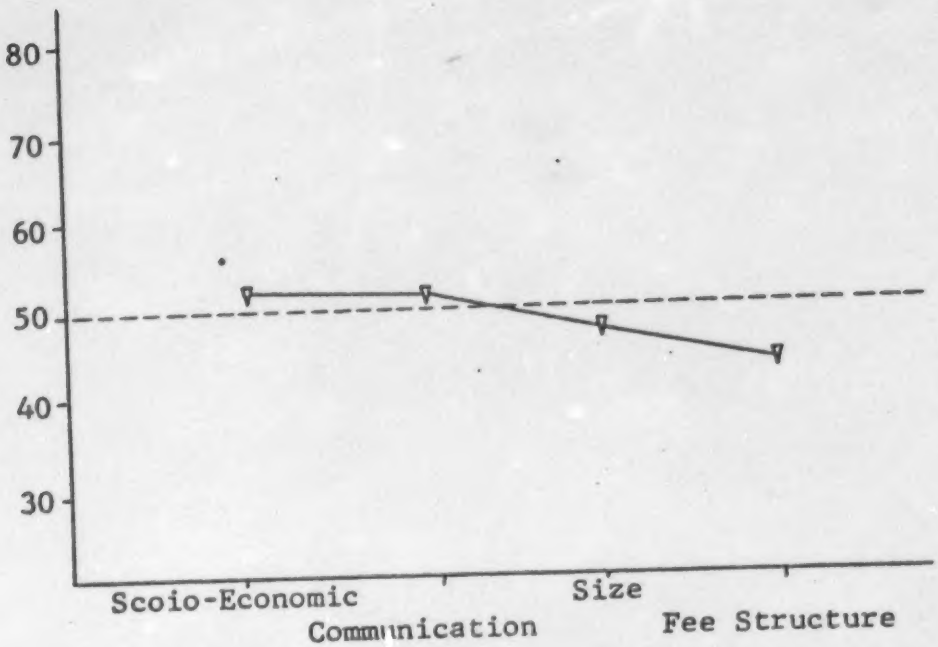


Fig. 1e: Profile of O-Type 5

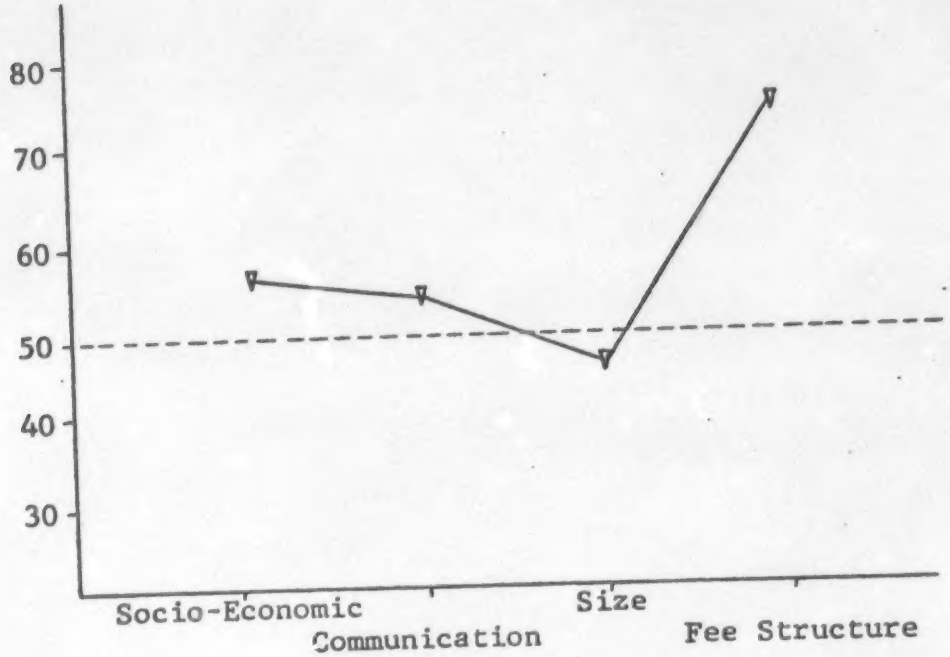


Fig. 1f: Profile of O-Type 6

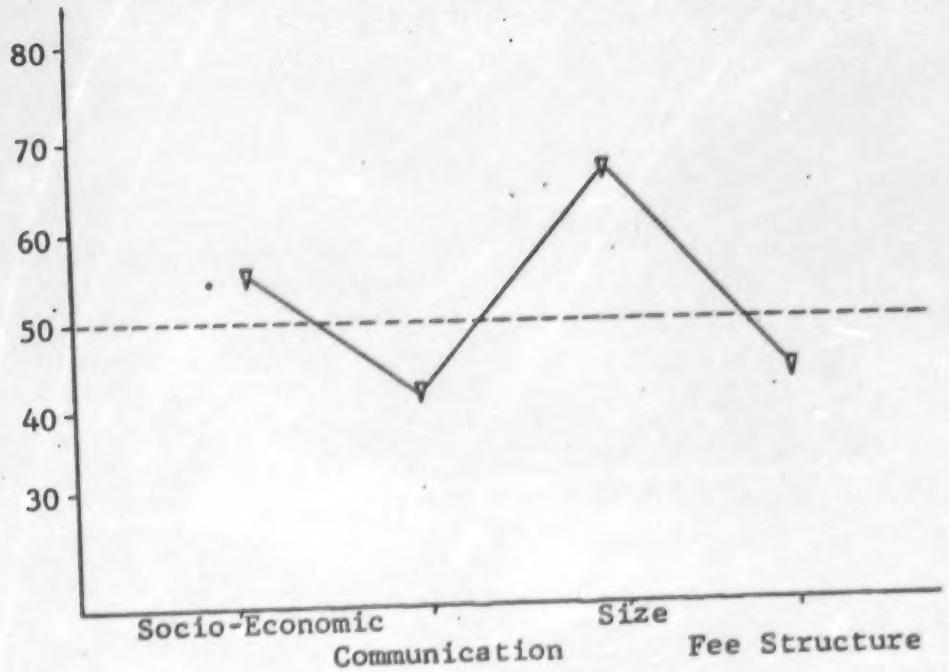


Fig. 1g: Profile of O-Type 7

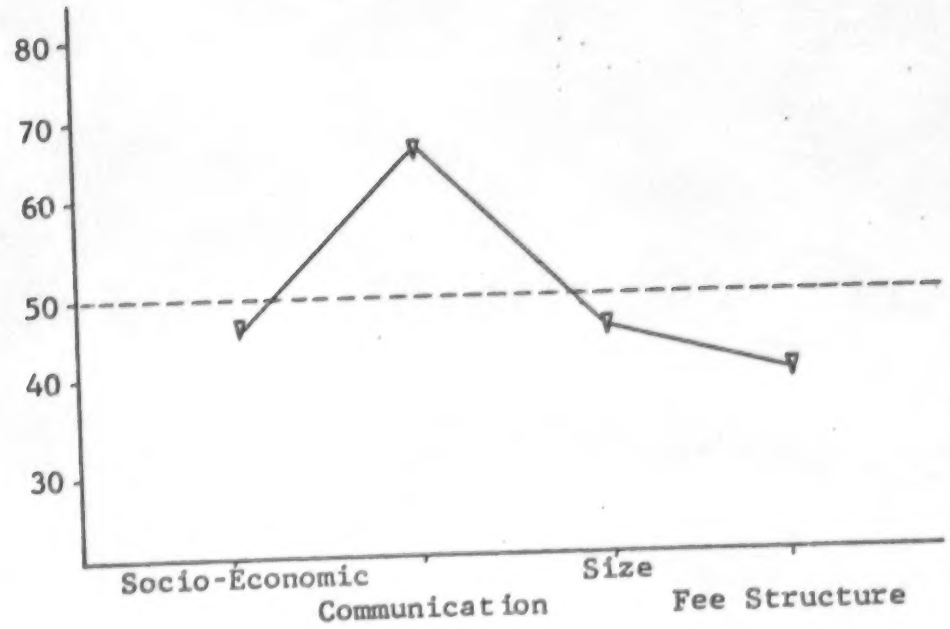


Fig. 1h: Profile of O-Type 8

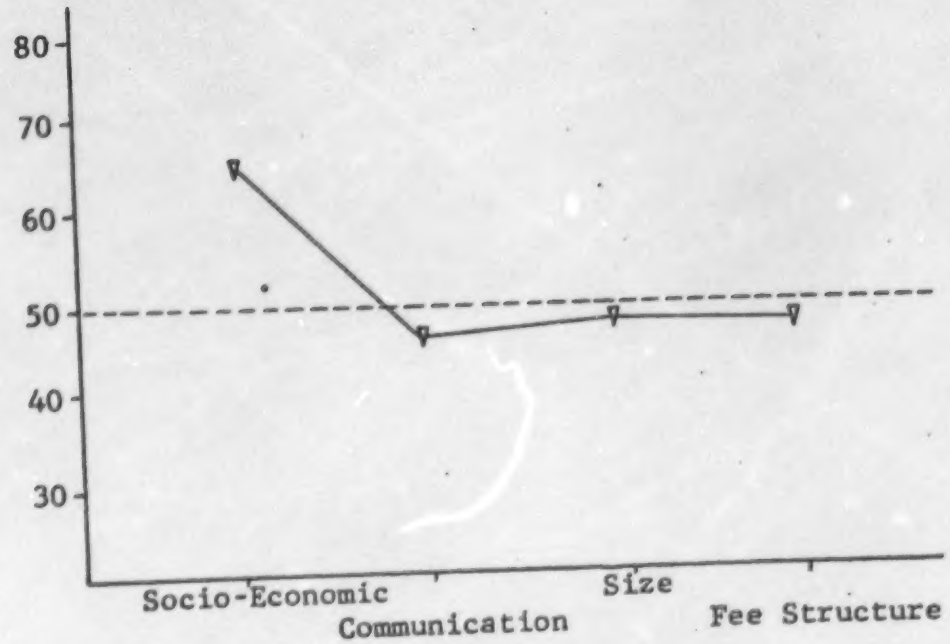


Fig. 1i: Profile of O-Type 9

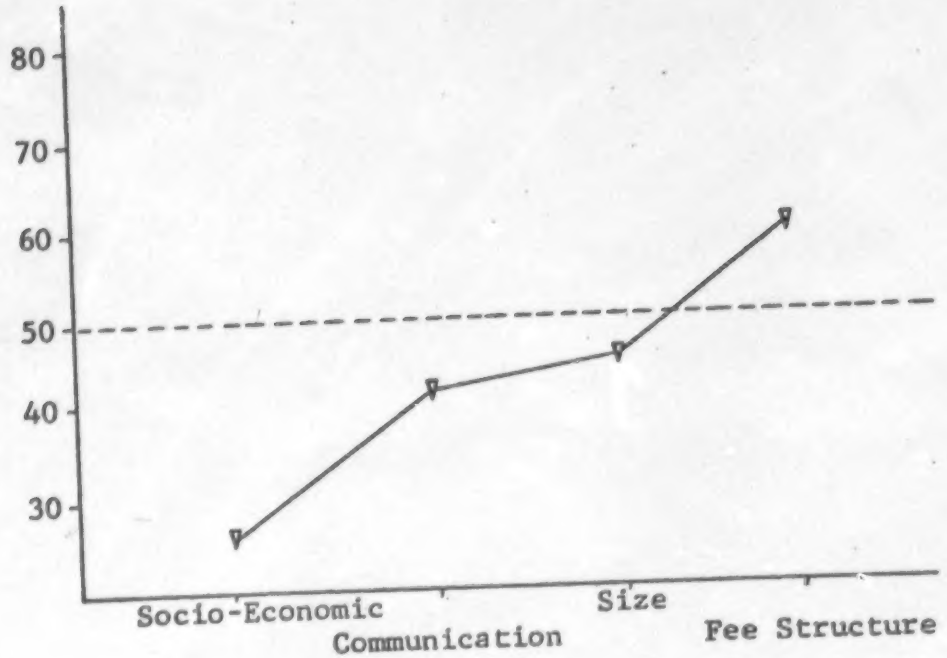


Fig. 1j: Profile of Reject 1

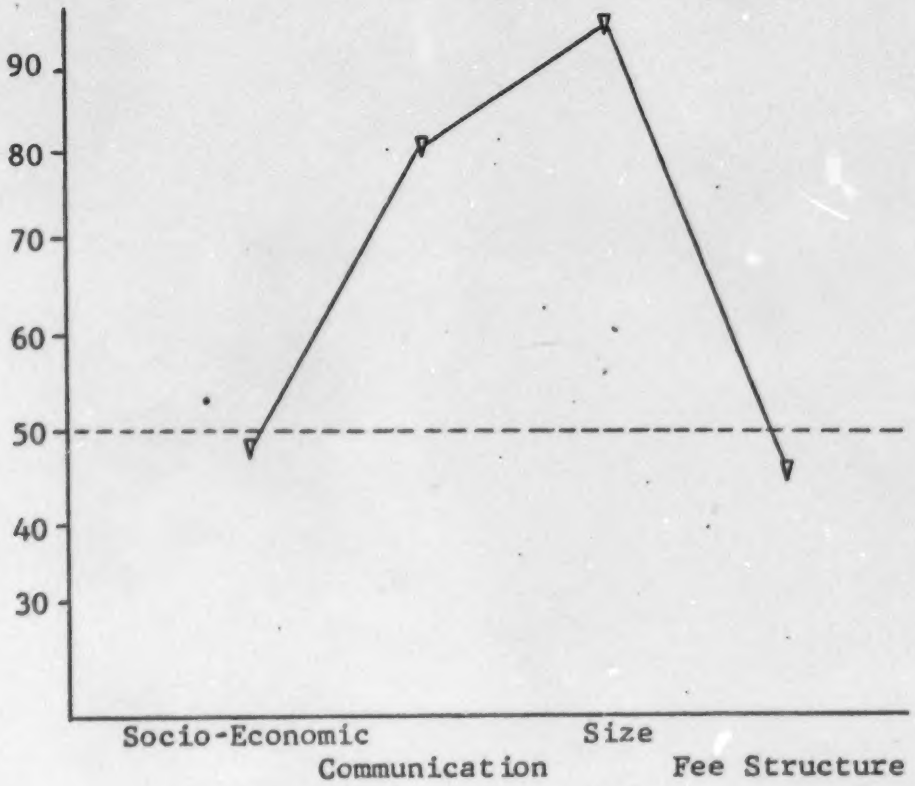


Fig. 1k: Profile of Reject 2

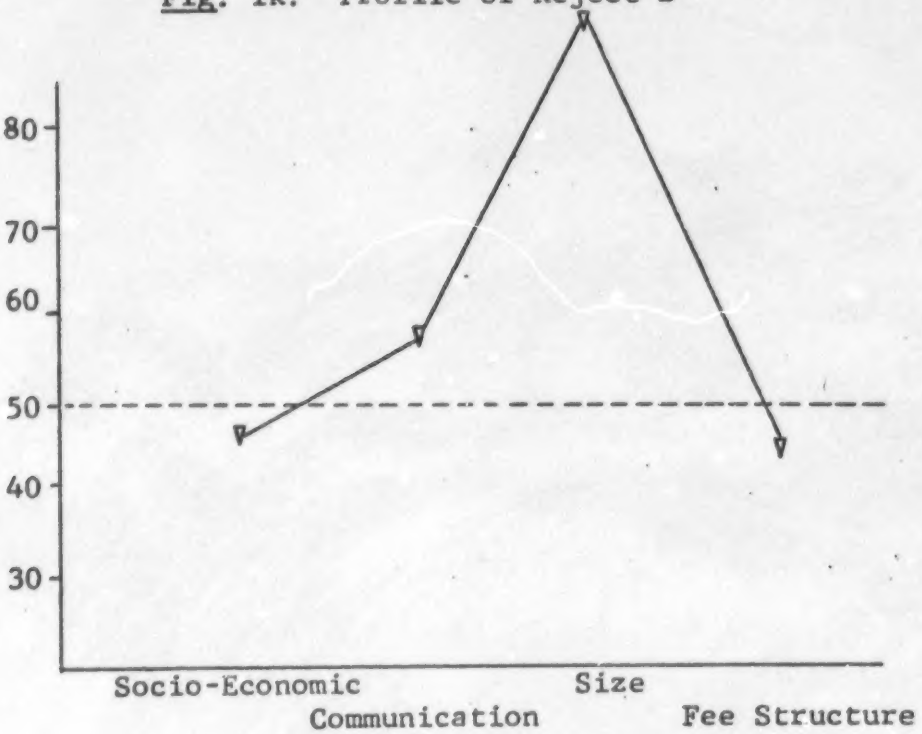


Fig. 1ℓ: Profile of Reject 3